

LC4.9U

AA

Service Service Service

For manual LGE plasma panel see: 3122 785 15590

For manual FHP PDP panel see: 3122 785 14580

For manual SDI PDP panel see: 3122 785 14990



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Service Manual

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1. Technical Specifications, Connections, and Chassis Overview

Index of this chapter:

- 1.1 Technical Specifications
- 1.2 Connection Overview
- 1.3 Chassis Overview

Notes:

- Figures can deviate due to the different set executions.
- Specifications are indicative (subject to change).

1.1 Technical Specifications

1.1.1 Vision

Display type	: Plasma
Screen size	: 42" (107 cm), 16:9
Resolution (HxV pixels)	: 42 inch: 852 x 480
Contrast ratio	:
- 42PF7320 /28	: 10,000:1
Light output (cd/m ²)	: 1000
Viewing angle (HxV degrees)	: 160x160
Tuning system	: PLL
TV Colour systems	: PAL N, PAL M
	: NTSC
Video playback	: PAL B/G; PAL
	: NTSC M/N 3.58, 4.43
Supported computer formats	: VGA (640x480)
	: SVGA (800x600)
	: XGA (1024x768)
Supported video formats	: 640x480i - 1fH
	: 720x576i - 1fH
	: 640x480p - 2fH
	: 720x576p - 2fH
	: 852x480p - 2fH
	: 1280x720 - 3fH
	: 1920x1080i - 2fH
Presets/channels	: 125 presets
Tuner bands	: VHF
	: UHF
	: S-band
	: Hyperband

1.1.2 Sound

Sound systems	: Virtual Dolby Surround
	: Stereo
	: SAP
Maximum power (W _{RMS})	: 2 x 15

1.1.3 Miscellaneous

Power supply:	
- Mains voltage (V _{AC})	: 100 - 250
- Mains frequency (Hz)	: 50 - 60
Ambient conditions:	
- Temperature range (°C)	: +5 to +40
- Maximum humidity	: 90% R.H.
Power consumption	
- Normal operation (W)	: ≈ 220
- Stand-by (W)	: < 2
Dimensions (WxHxD cm)	: 42 inch: 124x68x12.6
Weight (kg)	: 42 inch: 42

1.2 Connection Overview

Note: The following connector colour abbreviations are used (acc. to DIN/IEC 757): Bk= Black, Bu= Blue, Gn= Green, Gy= Grey, Rd= Red, Wh= White, and Ye= Yellow.

1.2.1 Side I/O connections

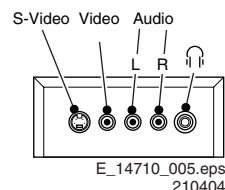


Figure 1-1 Side I/O connections

S-Video (Hosiden): Video Y/C - In

1 - Ground Y	Gnd	
2 - Ground C	Gnd	
3 - Video Y	1 V _{PP} / 75 ohm	
4 - Video C	0.3 V _{PP} / 75 ohm	

Cinch: Video CVBS - In, Audio - In

Ye - Video CVBS	1 V _{PP} / 75 ohm	
Wh - Audio L	0.5 V _{RMS} / 10 kohm	
Rd - Audio R	0.5 V _{RMS} / 10 kohm	

Mini Jack: Audio Head phone - Out

Bk - Head phone	32 - 600 ohm / 10 mW	
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1.2.2 Rear Connections

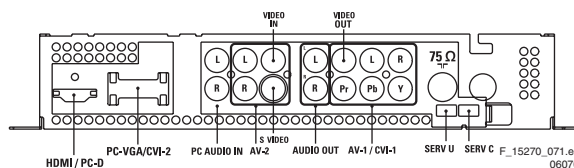


Figure 1-2 Rear I/O

Aerial - In

- - IEC-type (EU)	Coax, 75 ohm	
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Cinch: Video CVBS - In, Audio - In

Ye - Video CVBS	1 V _{PP} / 75 ohm	
Wh - Audio L	0.5 V _{RMS} / 10 kohm	
Rd - Audio R	0.5 V _{RMS} / 10 kohm	

Cinch: Video CVBS - Out, Audio - Out

Ye - Video CVBS	1 V _{PP} / 75 ohm	
Wh - Audio L	0.5 V _{RMS} / 10 kohm	
Rd - Audio R	0.5 V _{RMS} / 10 kohm	

Cinch: CVI-1 Video YPbPr - In

Gn - Video Y	1 V _{PP} / 75 ohm	
Bu - Video Pb	0.7 V _{PP} / 75 ohm	
Rd - Video Pr	0.7 V _{PP} / 75 ohm	

Cinch: CVI-1 Audio - In

Rd - Audio - R	0.5 V _{RMS} / 10 kohm	
Wh - Audio - L	0.5 V _{RMS} / 10 kohm	

Cinch: PC Audio - In

Rd - Audio - R	0.5 V _{RMS} / 10 kohm
Wh - Audio - L	0.5 V _{RMS} / 10 kohm


S-Video (Hosiden): Video Y/C - In

1 - Ground Y	Gnd
2 - Ground C	Gnd
3 - Video Y	1 V _{PP} / 75 ohm
4 - Video C	0.3 V _{PP} / 75 ohm


Service connector (ComPair)

1 - SDA-S	I ² C Data (0 - 5 V)
2 - SCL-S	I ² C Clock (0 - 5 V)
3 - Ground	Gnd


Service connector (UART)

1 - UART_TX	Transmit
2 - Ground	Gnd
3 - UART_RX	Receive

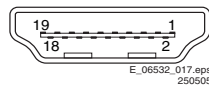

HDMI/PC-D: Digital Video, Digital Audio - In


Figure 1-3 HDMI (type A) connector

1 - D2+	Data channel
2 - Shield	Gnd
3 - D2-	Data channel
4 - D1+	Data channel
5 - Shield	Gnd
6 - D1-	Data channel
7 - D0+	Data channel
8 - Shield	Gnd



9 - D0-	Data channel
10 - CLK+	Data channel
11 - Shield	Gnd
12 - CLK-	Data channel
13 - n.c.	
14 - n.c.	
15 - DDC_SCL	DDC clock
16 - DDC_SDA	DDC data
17 - Ground	Gnd
18 - +5V	
19 - HPD	Hot Plug Detect
20 - Ground	Gnd

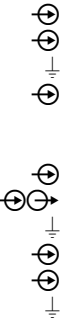
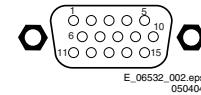
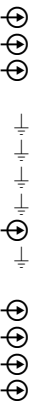

PC VGA/DVI-2: Video 2fH RGB/YPbPr - In


Figure 1-4 VGA Connector

1 - Video Red/Pr	0.7 V _{PP} / 75 ohm
2 - Video Green/Y	0.7 V _{PP} / 75 ohm
3 - Video Blue/Pb	0.7 V _{PP} / 75 ohm
4 - n.c.	
5 - Ground	Gnd
6 - Ground Red	Gnd
7 - Ground Green	Gnd
8 - Ground Blue	Gnd
9 - +5V _{DC}	+5 V
10 - Ground Sync	Gnd
11 - n.c.	
12 - DDC_SDA	DDC data
13 - H-sync	0 - 5 V
14 - V-sync	0 - 5 V
15 - DDC_SCL	DDC clock



1.3 Chassis Overview

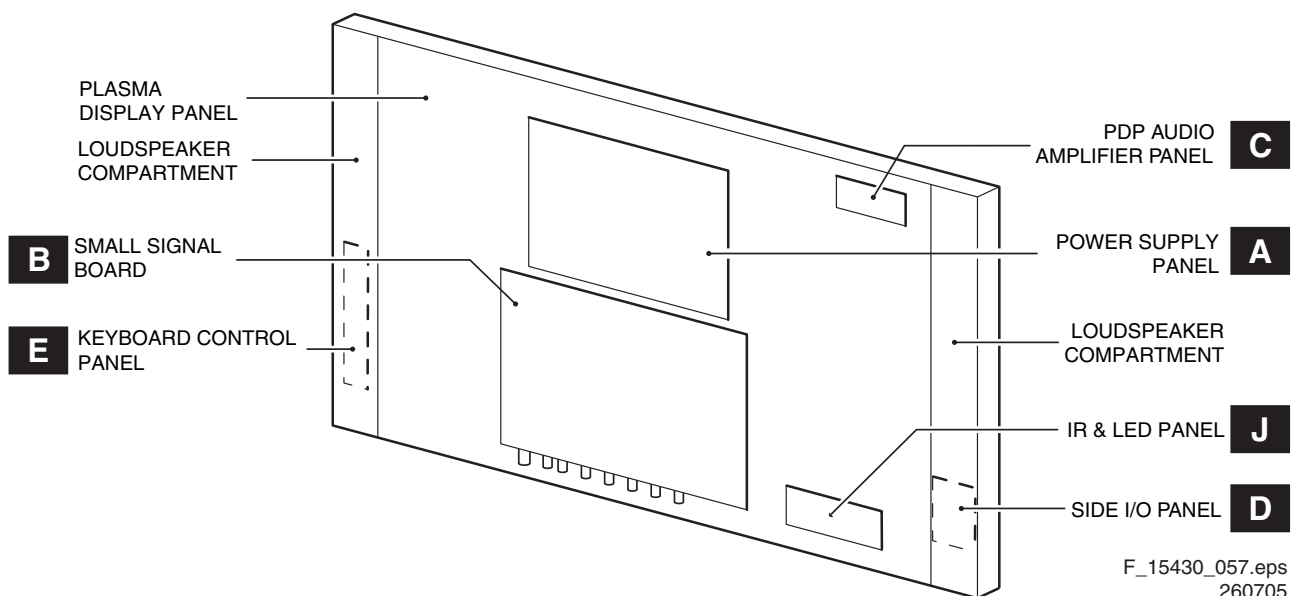

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Figure 1-5 CBA locations

2. Safety Instructions, Warnings, and Notes

Index of this chapter:

- 2.1 Safety Instructions
- 2.2 Warnings
- 2.3 Notes

2.1 Safety Instructions

Safety regulations require the following **during** a repair:

- Connect the set to the Mains (AC Power) via an isolation transformer (> 800 VA).
- Replace safety components, indicated by the symbol , only by components identical to the original ones. Any other component substitution (other than original type) may increase risk of fire or electrical shock hazard.

Safety regulations require that **after** a repair, the set must be returned in its original condition. Pay in particular attention to the following points:

- Route the wire trees correctly and fix them with the mounted cable clamps.
- Check the insulation of the Mains (AC Power) lead for external damage.
- Check the strain relief of the Mains (AC Power) cord for proper function.
- Check the electrical DC resistance between the Mains (AC Power) plug and the secondary side (only for sets that have a Mains (AC Power) isolated power supply):
 1. Unplug the Mains (AC Power) cord and connect a wire between the two pins of the Mains (AC Power) plug.
 2. Set the Mains (AC Power) switch to the "on" position (keep the Mains (AC Power) cord unplugged!).
 3. Measure the resistance value between the pins of the Mains (AC Power) plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be between 4.5 Mohm and 12 Mohm.
 4. Switch "off" the set, and remove the wire between the two pins of the Mains (AC Power) plug.
- Check the cabinet for defects, to prevent touching of any inner parts by the customer.

2.2 Warnings

- All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD ) . Careless handling during repair can reduce life drastically. Make sure that, during repair, you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this same potential. Available ESD protection equipment:
 - Complete kit ESD3 (small tablemat, wristband, connection box, extension cable and earth cable) 4822 310 10671.
 - Wristband tester 4822 344 13999.
- Be careful during measurements in the high voltage section.
- Never replace modules or other components while the unit is switched "on".
- When you align the set, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

2.3 Notes

2.3.1 General

- Measure the voltages and waveforms with regard to the chassis (= tuner) ground () , or hot ground () , depending on the tested area of circuitry. The voltages and waveforms shown in the diagrams are indicative. Measure them in the Service Default Mode (see chapter 5) with a colour bar signal and stereo sound (L: 3 kHz, R: 1 kHz unless stated otherwise) and picture carrier at 475.25 MHz for PAL, or 61.25 MHz for NTSC (channel 3).
- Where necessary, measure the waveforms and voltages with () and without () aerial signal. Measure the voltages in the power supply section both in normal operation () and in stand-by () . These values are indicated by means of the appropriate symbols.
- The semiconductors indicated in the circuit diagram and in the parts lists, are interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.

2.3.2 Schematic Notes

- All resistor values are in ohms, and the value multiplier is often used to indicate the decimal point location (e.g. 2K2 indicates 2.2 kohm).
- Resistor values with no multiplier may be indicated with either an "E" or an "R" (e.g. 220E or 220R indicates 220 ohm).
- All capacitor values are given in micro-farads ($\mu = \times 10^{-6}$), nano-farads ($n = \times 10^{-9}$), or pico-farads ($p = \times 10^{-12}$).
- Capacitor values may also use the value multiplier as the decimal point indication (e.g. 2p2 indicates 2.2 pF).
- An "asterisk" (*) indicates component usage varies. Refer to the diversity tables for the correct values.
- The correct component values are listed in the Spare Parts List. Therefore, always check this list when there is any doubt.

2.3.3 Rework on BGA (Ball Grid Array) ICs

General

Although (LF)BGA assembly yields are very high, there may still be a requirement for component rework. By rework, we mean the process of removing the component from the PWB and replacing it with a new component. If an (LF)BGA is removed from a PWB, the solder balls of the component are deformed drastically so the removed (LF)BGA has to be discarded.

Device Removal

As is the case with any component that, is being removed, it is essential when removing an (LF)BGA, that the board, tracks, solder lands, or surrounding components are not damaged. To remove an (LF)BGA, the board must be uniformly heated to a temperature close to the reflow soldering temperature. A uniform temperature reduces the risk of warping the PWB. To do this, we recommend that the board is heated until it is certain that all the joints are molten. Then carefully pull the component off the board with a vacuum nozzle. For the appropriate temperature profiles, see the IC data sheet.

Area Preparation

When the component has been removed, the vacant IC area must be cleaned before replacing the (LF)BGA. Removing an IC often leaves varying amounts of solder on the mounting lands. This excessive solder can be removed with either a solder sucker or solder wick. The remaining flux can be removed with a brush and cleaning agent.

After the board is properly cleaned and inspected, apply flux on the solder lands and on the connection balls of the (LF)BGA.

Note: Do not apply solder paste, as this has been shown to result in problems during re-soldering.

Device Replacement

The last step in the repair process is to solder the new component on the board. Ideally, the (LF)BGA should be aligned under a microscope or magnifying glass. If this is not possible, try to align the (LF)BGA with any board markers. So as not to damage neighbouring components, it may be necessary to reduce some temperatures and times.

More Information

For more information on how to handle BGA devices, visit this URL: www.atyourservice.ce.philips.com (needs subscription, not available for all regions). After login, select "Magazine", then go to "Repair Downloads". Here you will find Information on how to deal with BGA-ICs.

2.3.4 Lead-free Solder

Philips CE is producing lead-free sets (PBF) from 1.1.2005 onwards.

Identification: The bottom line of a type plate gives a 14-digit serial number. Digits 5 and 6 refer to the production year, digits 7 and 8 refer to production week (in example below it is 1991 week 18).



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Figure 2-1 Serial number example

Regardless of the special lead-free logo (which is not always indicated), one must treat all sets from this date onwards according to the rules as described below.

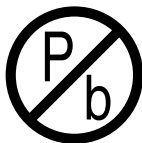


Figure 2-2 Lead-free logo

Due to lead-free technology some rules have to be respected by the workshop during a repair:

- Use only lead-free soldering tin Philips SAC305 with order code 0622 149 00106. If lead-free solder paste is required, please contact the manufacturer of your soldering equipment. In general, use of solder paste within workshops should be avoided because paste is not easy to store and to handle.
- Use only adequate solder tools applicable for lead-free soldering tin. The solder tool must be able:
 - To reach a solder-tip temperature of at least 400°C.
 - To stabilise the adjusted temperature at the solder-tip.
 - To exchange solder-tips for different applications.
- Adjust your solder tool so that a temperature of around 360°C - 380°C is reached and stabilised at the solder joint. Heating time of the solder-joint should not exceed ~ 4 sec. Avoid temperatures above 400°C, otherwise wear-out of tips will increase drastically and flux-fluid will be destroyed.

To avoid wear-out of tips, switch "off" unused equipment or reduce heat.

- Mix of lead-free soldering tin/parts with leaded soldering tin/parts is possible but PHILIPS recommends strongly to **avoid** mixed regimes. If this cannot be avoided, carefully clear the solder-joint from old tin and re-solder with new tin.
- Use only original spare-parts listed in the Service-Manuals. Not listed standard material (commodities) has to be purchased at external companies.
- Special information for lead-free BGA ICs: these ICs will be delivered in so-called "dry-packaging" to protect the IC against moisture. This packaging may only be opened shortly before it is used (soldered). Otherwise the body of the IC gets "wet" inside and during the heating time the structure of the IC will be destroyed due to high (steam-) pressure inside the body. If the packaging was opened before usage, the IC has to be heated up for some hours (around 90°C) for drying (think of ESD-protection!).
Do not re-use BGAs at all!
- For sets produced before 1.1.2005, containing leaded soldering tin and components, all needed spare parts will be available till the end of the service period. For the repair of such sets nothing changes.

In case of doubt whether the board is lead-free or not (or with mixed technologies), you can use the following method:

- Always use the highest temperature to solder, when using SAC305 (see also instructions below).
- De-solder thoroughly (clean solder joints to avoid the mixing of two alloys).

Caution: For BGA-ICs, you **must** use the correct temperature profile, which is coupled to the 12NC. For an overview of these profiles, visit the website www.atyourservice.ce.philips.com (needs subscription, but is not available for all regions). You will find this and more technical information within the "Magazine", chapter "Repair Downloads".

For additional questions please contact your local repair help desk.

2.3.5 Practical Service Precautions

- **It makes sense to avoid exposure to electrical shock.** While some sources are expected to have a possible dangerous impact, others of quite high potential are of limited current and are sometimes held in less regard.
- **Always respect voltages.** While some may not be dangerous in themselves, they can cause unexpected reactions that are best avoided. Before reaching into a powered TV set, it is best to test the high voltage insulation. It is easy to do, and is a good service precaution.

3. Directions for Use

You can download this information from the following websites:

<http://www.philips.com/support>

<http://www.p4c.philips.com>

4. Mechanical Instructions

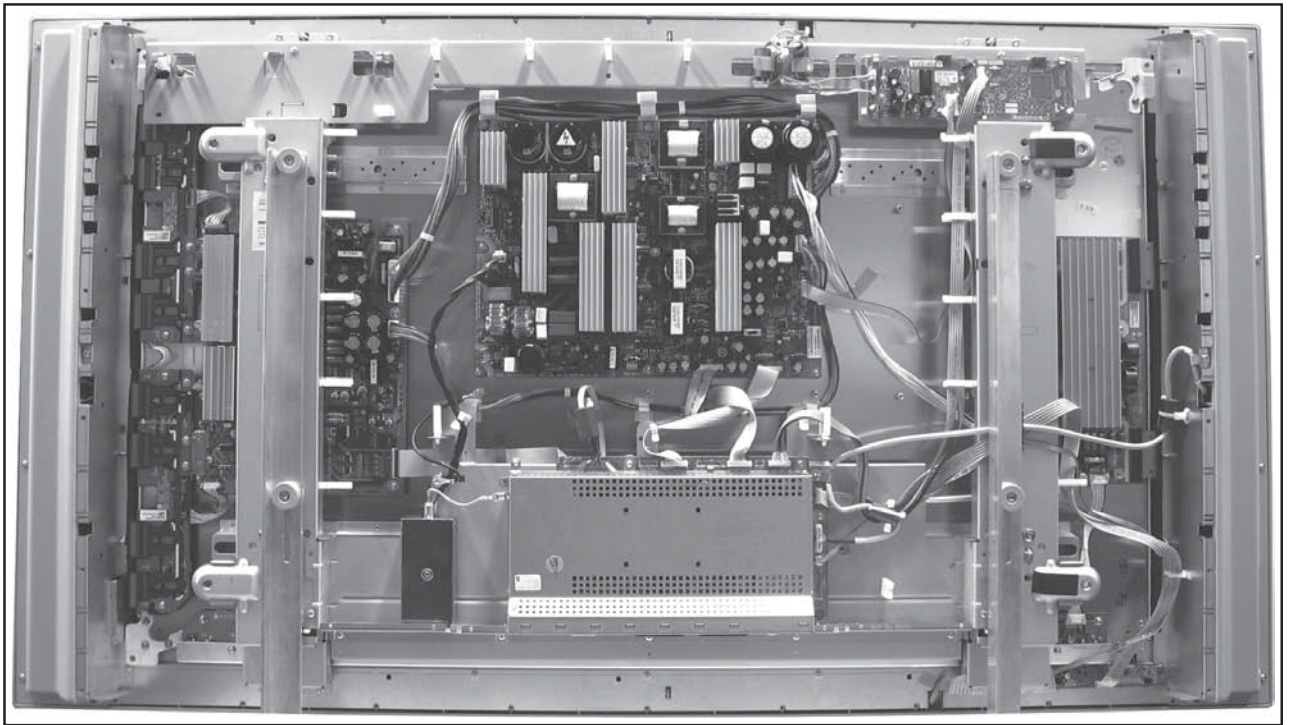
Index of this chapter:

- 4.1 Cable Dressing
- 4.2 Service Positions
- 4.3 Assy/Panel Removal
- 4.4 Set Re-assembly

Notes:

- Figures below can deviate slightly from the actual situation, due to the different set executions.
- Follow the disassembling instructions in described order.

4.1 Cable Dressing



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Figure 4-1 Cable dressing

4.2 Service Positions

For easy servicing of this set, there are a few possibilities created:

- The buffers from the packaging (see figure "Rear cover").
- Foam bars (created for service).
- Aluminium service stands (created for Service).

face down on the (ESD protective) foam bars, a stable situation is created to perform measurements and alignments. By placing a mirror under the TV, you can monitor the screen.

4.2.2 Aluminium Stands

4.2.1 Foam Bars

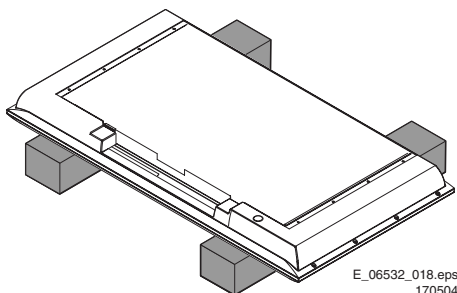


Figure 4-2 Foam bars

The foam bars (order code 3122 785 90580 for two pieces) can be used for all types and sizes of Flat TVs. By laying the TV

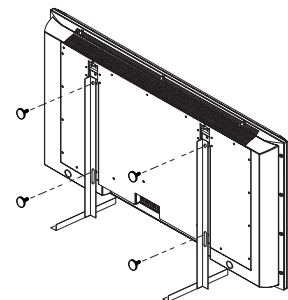


Figure 4-3 Aluminium stands (drawing of Mkl)

The aluminium stands (order code 3122 785 90480) can be mounted with the back cover removed or still left on. So, the stand can be used to store products or to do measurements. It is also very suitable to perform duration tests without taking much space, without having the risk of overheating, or the risk of products falling. The stands can be mounted and removed

quick and easy with use of the delivered screws that can be tightened and loosened manually without the use of tools. See figure above.

Note: Only use the delivered screws to mount the monitor to the stands.

4.3 Assy/Panel Removal

4.3.1 Metal Rear Cover

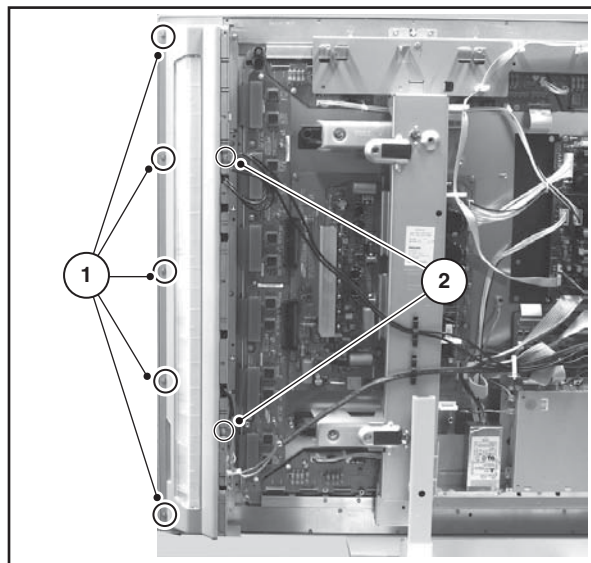
Caution: Disconnect the Mains/AC Power cord before you remove the rear cover!

1. Place the TV set upside down on a table top, using the foam bars (see part "Foam Bars").
Caution: do **not** put pressure on the display, but let the monitor lean on the speakers or the Front cover.
2. Remove all T10 screws around the edges of the metal rear cover: "parker" screws around the outer rim, "tapping" screws around the connector plate.
3. Remove the four "mushrooms" from the rear cover.
4. Lift the metal rear cover from the set. Make sure that wires and flat foils are not damaged.

4.3.2 Speaker Compartment Cover

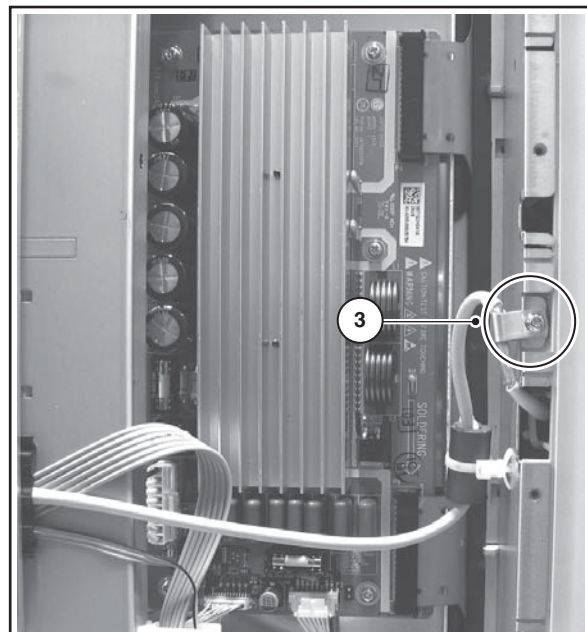
After removing the metal rear cover, you gain access to the Speaker Compartment covers.

1. Remove all T10 screws [1] around the outer rim of the cover (see Figure "Speaker compartment cover removal").
2. Remove the T10 screws [2] on top of the inner rim, including the one which secures the grounding clamp (3, see Figure "Grounding clamp").
3. Now, remove the plastic cable fixation noose (4, see Figure "Cable fixation noose").
4. After removal of all the screws, slightly push the top of the cover inwards. This will lift the outer rim slightly up so you can take the cover out.



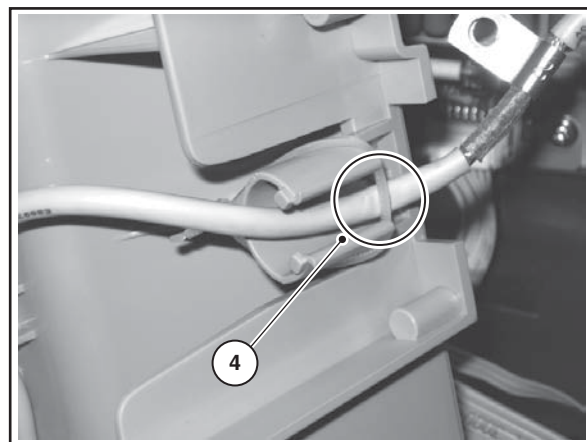
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Figure 4-4 Speaker compartment cover removal



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Figure 4-5 Grounding clamp



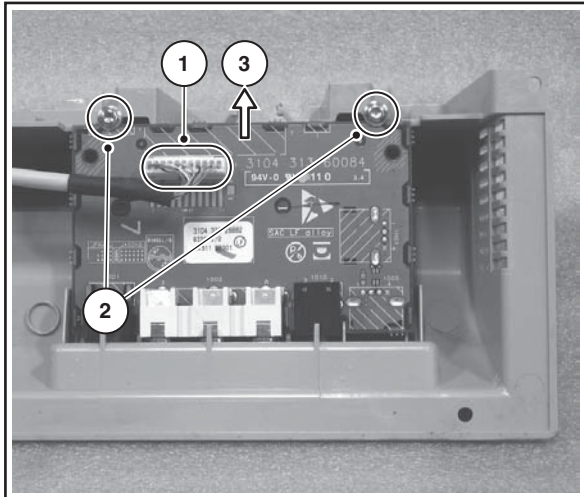
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Figure 4-6 Cable fixation noose

4.3.3 Side I/O Panel

After removal of the Speaker Compartment Covers, this panel is accessible.

1. Disconnect the cable (1) from the panel.
2. Remove the T10 mounting screws [2] that hold the assy.
3. Remove the panel from its bracket [3], by pushing against the front side of the side I/O cinch connectors.

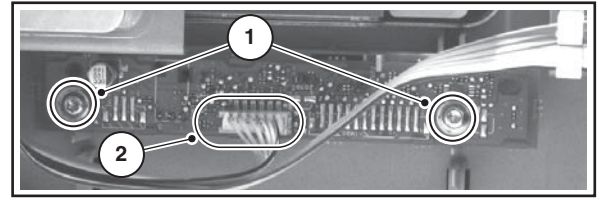


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Figure 4-7 Side I/O panel removal

When it is defective, replace the whole unit.

4.3.4 LED Panel

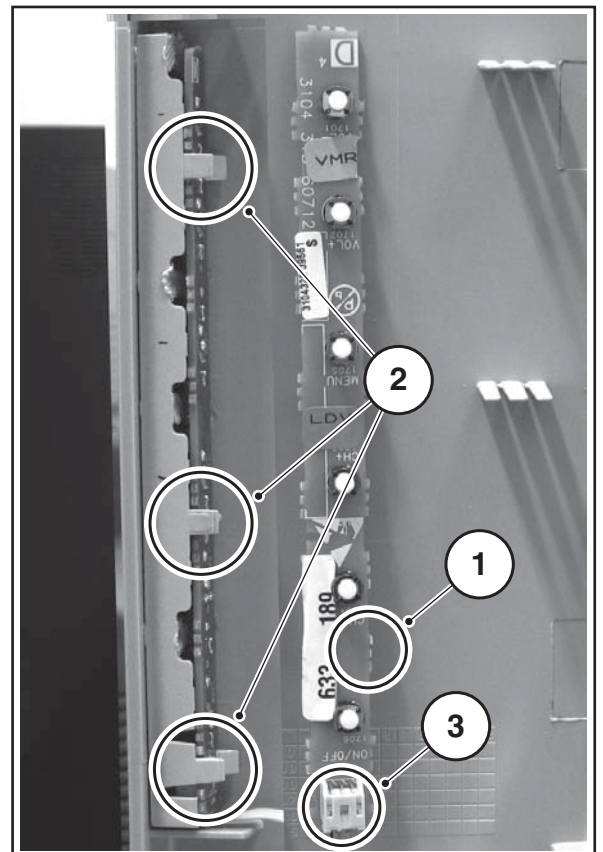


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Figure 4-8 LED panel

1. Remove the fixation screws (1) and take the panel out of its brackets.
2. Disconnect the cable (2) from the panel.

4.3.5 Keyboard Control Panel



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Figure 4-9 Keyboard control panel

1. Remove the panel (1) from its three brackets (2).
2. Disconnect the cable (3) from the panel.

4.3.6 SSB Cover Shield

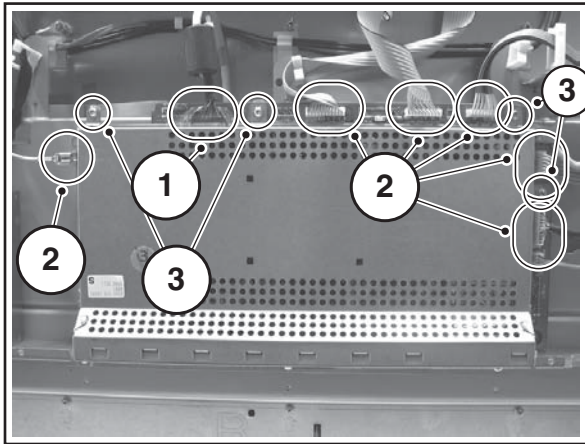
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Figure 4-10 SSB cover shield

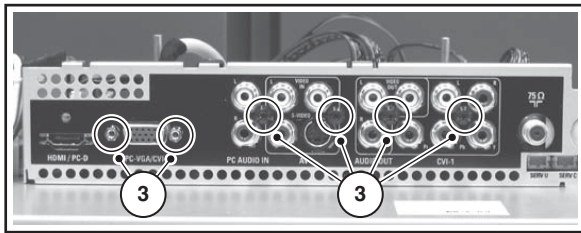
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Figure 4-11 DVI-I connector and rear I/O panel screws

1. Very **cautiously** disconnect the LVDS cable (1) from the SSB panel (see Figure "SSB board cover shield"). Notice that this cable is very fragile.
2. Remove all other cables (2) from the SSB board (see Figure "SSB board cover shield"), including the grounding cable.
3. Remove the fixation screws (3), see Figure "SSB board cover shield" and remove the SSB shield with the SSB board inside, and the rear I/O panel still attached to it.
4. Remove the fixation screws (1) from the DVI-I connector and from the rear panel, see Figure "DVI-I connector and rear panel screws", and remove the rear I/O panel from the SSB board.
5. Remove the upper part of the shield from the SSB panel, by unhooking it from its brackets. Be careful not to damage the LVDS connector on the SSB board, see Figure "SSB board cover shield".

4.3.7 Small Signal Board

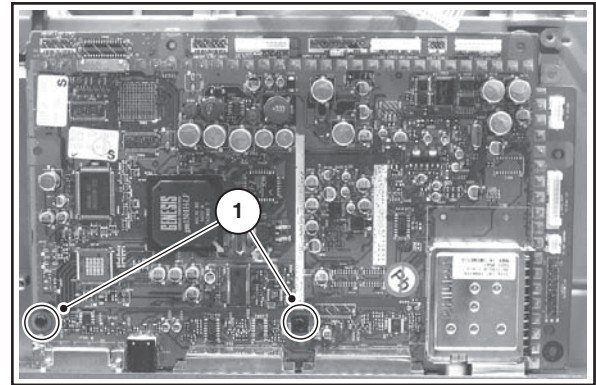
F_15420_040.eps
070605

Figure 4-12 SSB

1. Remove the two fixation screws (1) that secure the SSB board on the lower part of the SSB shielding, see Figure "SSB".
2. Remove the SSB.

4.3.8 Power Supply Panel

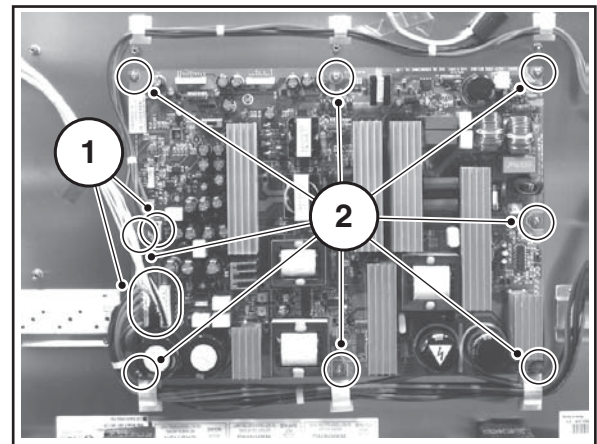
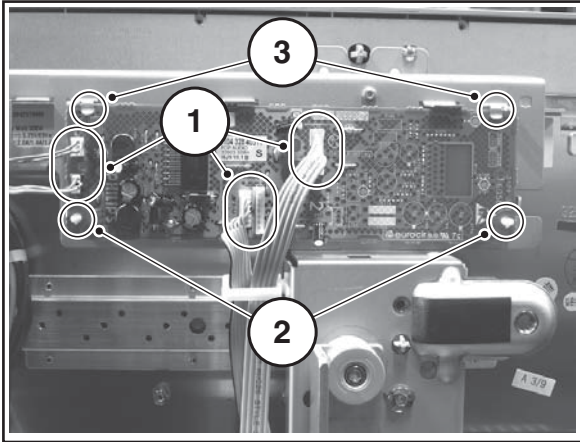
F_15430_050.eps
100605

Figure 4-13 Power supply panel

1. Disconnect all cables (1) from the panel.
2. Remove the fixation screws (2) from the panel.
3. Take the panel out of its brackets.

4.3.9 Class D Audio Amplifier Panel



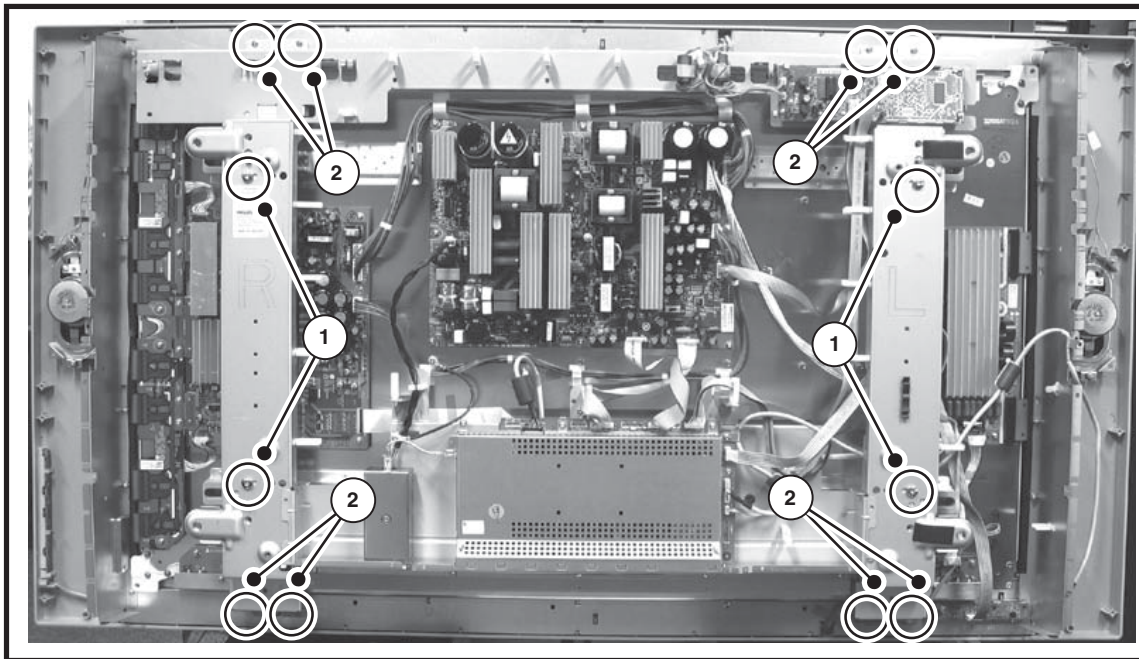
F_15430_051.eps
100605

Figure 4-14 Class D audio amplifier panel

1. Disconnect all cables (1) from the panel.
2. Pinch the plastic fixation clamps (2) firmly between your fingers, and pull the panel upwards.
3. Take the panel out of its brackets (3).

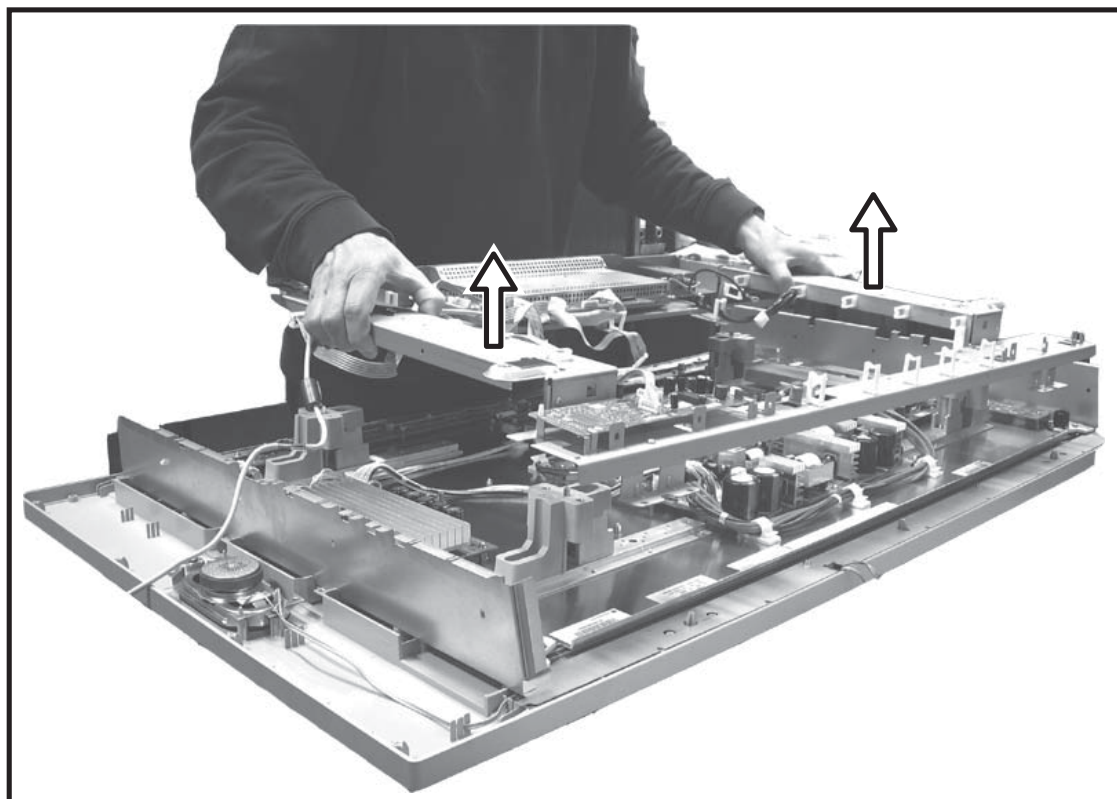
4.3.10 Plasma Display Panel / Glass Plate

1. Remove the T20 display panel mounting screws [1].
2. Remove the T10 screws [2] from the mounting frame.
3. Unplug all cable(s):
 - LVDS cable at SSB side (fragile connector!).
 - SSB supply cables at the Main Supply board.
 - Mains cable at the Main Supply board.
 - Side I/O cable at SSB side (fragile connector!).
- Cable at LED panel.
- Keyboard cable at SSB side.
- Audio Amplifier supply cable at the Main Supply board.
- Loudspeaker cables (incl. ferrites) at the Audio panel.
4. Lift the metal frame (together with all PWBs) from the display panel (see figure "Frame lift").
5. After removal of the frame, lift the PDP from the set.



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200505

Figure 4-15 Display panel removal



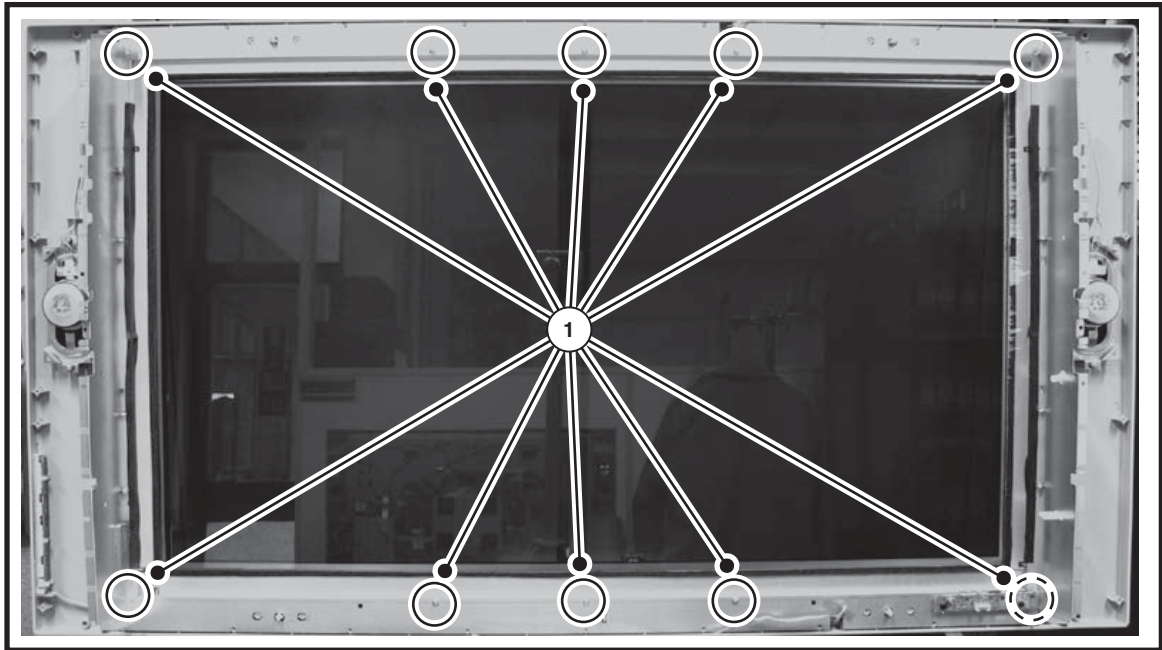
F_15400_120.eps
200505

Figure 4-16 Frame lift

4.3.11 PDP Glass Plate

In order to remove/exchange the PDP glass plate:

1. Remove the PDP as described earlier.
2. Remove the T10 screws [1] from the mounting frame.
3. After removal of the frame, you can lift the glass plate from the set.



F_15400_119.eps
200505

Figure 4-17 Glass plate removal

4.4 Set Re-assembly

To re-assemble the whole set, execute all processes in reverse order.

Notes:

- While re-assembling, make sure that all cables are placed and connected in their original positions. See Figure "Cable dressing". Be careful with the fragile LVDS cable.
- For a complete description of the Plasma panel, see the LGE plasma panel Service Manual (12nc is listed on the front page).

5. Service Modes, Error Codes, and Fault Finding

Index of this chapter:

- 5.1 Test Points
- 5.2 Service Modes
- 5.3 Problems and Solving Tips Related to CSM
- 5.4 Service Tools
- 5.5 Error Codes
- 5.6 The Blinking LED Procedure
- 5.7 Fault Finding and Repair Tips

5.1 Test Points

This chassis is equipped with test points in the service printing. In the schematics test points are identified with a rectangle box around Fxxx or lxxx.

Perform measurements under the following conditions:

- Television set in Service Default Alignment Mode.
- Video input: Colour bar signal.
- Audio input: 3 kHz left channel, 1 kHz right channel.

5.2 Service Modes

Service Default mode (SDM) and Service Alignment Mode (SAM) offers several features for the service technician, while the Customer Service Mode (CSM) is used for communication between the call centre and the customer.

This chassis also offers the option of using ComPair, a hardware interface between a computer and the TV chassis. It offers the possibilities of structured troubleshooting, error code reading, and software version read-out for all chassis. *Minimum requirements for ComPair:* a Pentium processor, a Windows OS, and a CD-ROM drive (see also paragraph "ComPair").

5.2.1 Service Default Mode (SDM)

Purpose

- To create a predefined setting for measurements to be made.
- To override software protections.
- To start the blinking LED procedure.
- To inspect the error buffer.
- To check the life timer.

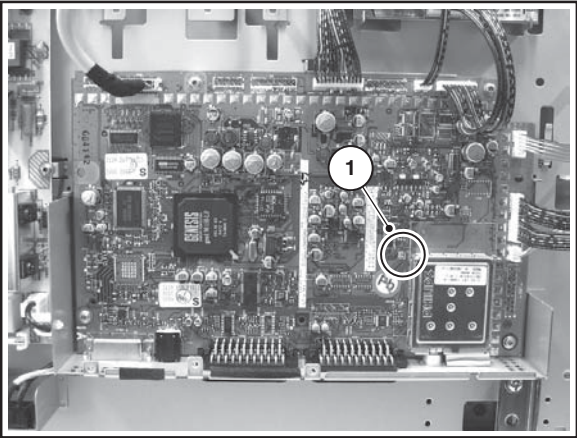
Specifications

- Tuning frequency: 61.25 MHz.
- Colour system: NTSC.
- All picture settings at 50% (brightness, colour contrast, hue).
- Bass, treble, and balance at 50 %; volume at 25 %.
- All service-unfriendly modes (if present) are disabled. The service unfriendly modes are:
 - Timer / Sleep timer.
 - Child / parental lock.
 - Blue mute.
 - Hotel / hospital mode.
 - Auto shut off (when no "IDENT" video signal is received for 15 minutes).
 - Skipping of non-favourite presets / channels.
 - Auto-storage of personal presets.
 - Auto user menu time-out.
 - Auto Volume Levelling (AVL).

How to Enter

To enter SDM, use one of the following methods:

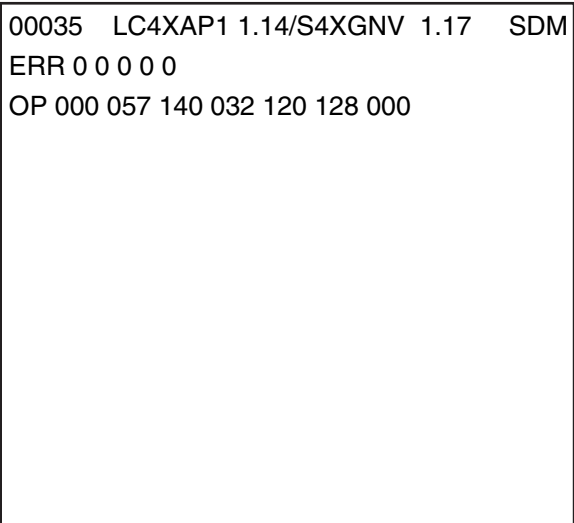
- Press the following key sequence on the remote control transmitter: "062596" directly followed by the MENU button (do not allow the display to time out between entries while keying the sequence).
- Short "Service" jumpers on the TV board during cold start and apply mains (see Figure "Service jumpers"). Then press the mains button (remove the short after start-up). **Caution:** Entering SDM by shorting "Service" jumpers will override the +8V-protection. Do this only for a short period. When doing this, the service-technician must know exactly what he is doing, as it could damage the television set.
- Or via ComPair.



F_15270_053.eps
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Figure 5-1 Service jumpers

After entering SDM, the following screen is visible, with SDM in the upper right corner of the screen to indicate that the television is in Service Default Mode.



F_15430_058.eps
260705

Figure 5-2 SDM menu

How to Navigate

Use one of the following methods:

- When you press the MENU button on the remote control, the set will switch on the normal user menu in the SDM mode.
- On the TV, press and hold the VOLUME DOWN and press the CHANNEL DOWN for a few seconds, to switch from SDM to SAM and reverse.

How to Exit

Switch the set to STANDBY by pressing the mains button on the remote control transmitter or the television set.

If you turn the television set off by removing the mains (i.e., unplugging the television) without using the mains button, the television set will remain in SDM when mains is re-applied, and the error buffer is not cleared.

5.2.2 Service Alignment Mode (SAM)**Purpose**

- To change option settings.
- To display / clear the error code buffer.
- To perform alignments.

Specifications

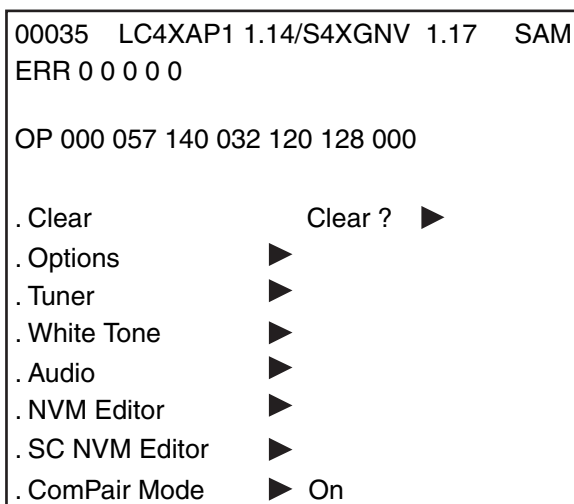
- Operation hours counter (maximum five digits displayed).
- Software version, Error codes, and Option settings display.
- Error buffer clearing.
- Option settings.
- AKB switching.
- Software alignments (Tuner, White Tone, Geometry & Audio).
- NVM Editor.
- ComPair Mode switching.

How to Enter

To enter SAM, use one of the following methods:

- Press the following key sequence on the remote control transmitter: "062596" directly followed by the OSD/STATUS/INFO(I+) button (do not allow the display to time out between entries while keying the sequence).
- Or via ComPair.

After entering SAM, the following screen is visible, with SAM in the upper right corner of the screen to indicate that the television is in Service Alignment Mode.



F_15430_059.eps
080605

Figure 5-3 SAM menu

Menu Explanation

1. **LLLLL**. This represents the run timer. The run timer counts normal operation hours, but does not count standby hours.
2. **AAABCD-X.Y**. This is the software identification of the main microprocessor:
 - **A**= the project name (LC04.x).
 - **B**= the region: E= Europe, A= Asia Pacific, U= NAFTA, L= LATAM.
 - **C**= the software diversity:
 - **Europe**: T= 1 page TXT, F= Full TXT, V= Voice control.
 - **LATAM and NAFTA**: N= Stereo non-dBx, S= Stereo dBx.
 - **Asian Pacific**: T= TXT, N= non-TXT, C= NTSC.
 - **ALL regions**: M= mono, D= DVD, Q= Mk2.
 - **D**= the language cluster number.
 - **X**= the main software version number (updated with a major change that is incompatible with previous versions).
 - **Y**= the sub software version number (updated with a minor change that is compatible with previous versions).
3. **EEEE-F.GG**. This is the software identification of the Scaler:
 - **EEEE**= the scaler sw cluster
 - **F**= the main sw version no.
 - **GG**= the sub-version no.
4. **SAM**. Indication of the Service Alignment Mode.
5. **Error Buffer**. Shows all errors detected since the last time the buffer was erased. Five errors possible.
6. **Option Bytes**. Used to set the option bytes. See "Options" in the Alignments section for a detailed description. Seven codes are possible.
7. **Clear**. Erases the contents of the error buffer. Select the CLEAR menu item and press the MENU RIGHT key. The content of the error buffer is cleared.
8. **Options**. Used to set the option bits. See "Options" in the Alignments section for a detailed description.
9. **Tuner**. Used to align the tuner. See "Tuner" in the Alignments section for a detailed description.
10. **White Tone**. Used to align the white tone. See "White Tone" in the Alignments section for a detailed description.
11. **Audio**. No audio alignment is necessary for this television set.
12. **NVM Editor**. Can be used to change the NVM data in the television set. See table "NVM data" further on.
13. **SC NVM Editor**. Can be used to edit Scaler NVM.
14. **ComPair**. Can be used to switch on the television to In System Programming (ISP) mode, for software uploading via ComPair.

Caution: When this mode is selected without ComPair connected, the TV will be blocked. Remove the AC power to reset the TV.

How to Navigate

- In SAM, select menu items with the MENU UP/DOWN keys on the remote control transmitter. The selected item will be highlighted. When not all menu items fit on the screen, use the MENU UP/DOWN keys to display the next / previous menu items.
- With the MENU LEFT/RIGHT keys, it is possible to:
 - Activate the selected menu item.
 - Change the value of the selected menu item.
 - Activate the selected submenu.
- In SAM, when you press the MENU button twice, the set will switch to the normal user menus (with the SAM mode still active in the background). To return to the SAM menu press the MENU or STATUS/EXIT button.
- When you press the MENU key in while in a submenu, you will return to the previous menu.

How to Store SAM Settings

To store the settings changed in SAM mode, leave the top level SAM menu by using the POWER button on the remote control transmitter or the television set.

How to Exit

Switch the set to STANDBY by pressing the mains button on the remote control transmitter or the television set. If you turn the television set "off" by removing the mains (i.e., unplugging the television) without using the mains button, the television set will remain in SAM when mains is re-applied, and the error buffer is not cleared.

5.2.3 Customer Service Mode (CSM)**Purpose**

The Customer Service Mode shows error codes and information on the TV's operation settings. The call centre can instruct the customer (by telephone) to enter CSM in order to identify the status of the set. This helps the call centre to diagnose problems and failures in the TV set before making a service call.

The CSM is a read-only mode; therefore, modifications are not possible in this mode.

How to Enter

To enter CSM, press the following key sequence on the remote control transmitter: "123654" (do not allow the display to time out between entries while keying the sequence).

Upon entering the Customer Service Mode, the following screen will appear:

```

1 00035 LC4XAP1 1.14/S4XGNV 1.17 CSM
2 CODES 0 0 0 0 0
3 OP 000 057 140 032 120 128 000
4
5
6 NOT TUNED
7 PAL
8 STEREO
9 CO 50 CL 50 BR 50
0 AVL Off
  
```

F_15430_060.eps
080605

Figure 5-4 CSM menu

Menu Explanation

1. Indication of the decimal value of the operation hours counter, Software identification of the main microprocessor (see "Service Default or Alignment Mode" for an explanation), and the service mode (CSM = Customer Service Mode).
2. Displays the last five errors detected in the error code buffer.
3. Displays the option bytes.
4. Displays the type number version of the set.
5. Reserved item for P3C call centres (AKBS stands for Advanced Knowledge Base System).
6. Indicates the television is receiving an "IDENT" signal on the selected source. If no "IDENT" signal is detected, the display will read "NOT TUNED"
7. Displays the detected Colour system (e.g. PAL/NTSC).

8. Displays the detected Audio (e.g. stereo/mono).
9. Displays the picture setting information.
10. Displays the sound setting information.

How to Exit

To exit CSM, use one of the following methods:

- Press the MENU, STATUS/EXIT, or POWER button on the remote control transmitter.
- Press the POWER button on the television set.

5.3 Problems and Solving Tips Related to CSM**5.3.1 Picture Problems**

Note: The problems described below are all related to the TV settings. The procedures used to change the value (or status) of the different settings are described.

Picture too Dark or too Bright

If:

- The picture improves when you press the AUTO PICTURE button on the remote control transmitter, or
- The picture improves when you enter the Customer Service Mode,

Then:

1. Press the AUTO PICTURE button on the remote control transmitter repeatedly (if necessary) to choose PERSONAL picture mode.
2. Press the MENU button on the remote control transmitter. This brings up the normal user menu.
3. In the normal user menu, use the MENU UP/DOWN keys to highlight the PICTURE sub menu.
4. Press the MENU LEFT/RIGHT keys to enter the PICTURE sub menu.
5. Use the MENU UP/DOWN keys (if necessary) to select BRIGHTNESS.
6. Press the MENU LEFT/RIGHT keys to increase or decrease the BRIGHTNESS value.
7. Use the MENU UP/DOWN keys to select PICTURE.
8. Press the MENU LEFT/RIGHT keys to increase or decrease the PICTURE value.
9. Press the MENU button on the remote control transmitter twice to exit the user menu.
10. The new PERSONAL preference values are automatically stored.

White Line around Picture Elements and Text

If:

The picture improves after you have pressed the AUTO PICTURE button on the remote control transmitter,

Then:

1. Press the AUTO PICTURE button on the remote control transmitter repeatedly (if necessary) to choose PERSONAL picture mode.
2. Press the MENU button on the remote control transmitter. This brings up the normal user menu.
3. In the normal user menu, use the MENU UP/DOWN keys to highlight the PICTURE sub menu.
4. Press the MENU LEFT/RIGHT keys to enter the PICTURE sub menu.
5. Use the MENU UP/DOWN keys to select SHARPNESS.
6. Press the MENU LEFT key to decrease the SHARPNESS value.
7. Press the MENU button on the remote control transmitter twice to exit the user menu.
8. The new PERSONAL preference value is automatically stored.

Snowy Picture

Check CSM line 6. If this line reads "Not Tuned", check the following:

- Antenna not connected. Connect the antenna.
- No antenna signal or bad antenna signal. Connect a proper antenna signal.
- The tuner is faulty (in this case line 2, the Error Buffer line, will contain error number 10). Check the tuner and replace/repair the tuner if necessary.

Black and White Picture

If:

- The picture improves after you have pressed the AUTO PICTURE button on the remote control transmitter,

Then:

1. Press the AUTO PICTURE button on the remote control transmitter repeatedly (if necessary) to choose PERSONAL picture mode.
2. Press the MENU button on the remote control transmitter. This brings up the normal user menu.
3. In the normal user menu, use the MENU UP/DOWN keys to highlight the PICTURE sub menu.
4. Press the MENU LEFT/RIGHT keys to enter the PICTURE sub menu.
5. Use the MENU UP/DOWN keys to select COLOR.
6. Press the MENU RIGHT key to increase the COLOR value.
7. Press the MENU button on the remote control transmitter twice to exit the user menu.
8. The new PERSONAL preference value is automatically stored.

Menu Text not Sharp Enough

If:

- The picture improves after you have pressed the AUTO PICTURE button on the remote control transmitter,

Then:

1. Press the AUTO PICTURE button on the remote control transmitter repeatedly (if necessary) to choose PERSONAL picture mode.
2. Press the MENU button on the remote control transmitter. This brings up the normal user menu.
3. In the normal user menu, use the MENU UP/DOWN keys to highlight the PICTURE sub menu.
4. Press the MENU LEFT/RIGHT keys to enter the PICTURE sub menu.
5. Use the MENU UP/DOWN keys to select PICTURE.
6. Press the MENU LEFT key to decrease the PICTURE value.
7. Press the MENU button on the remote control transmitter twice to exit the user menu.
8. The new PERSONAL preference value is automatically stored.

5.4 Service Tools

5.4.1 ComPair

Introduction

ComPair (Computer Aided Repair) is a service tool for Philips Consumer Electronics products. ComPair is a further development on the European DST (service remote control), which allows faster and more accurate diagnostics. ComPair has three big advantages:

1. ComPair helps you to quickly get an understanding on how to repair the chassis in a short time by guiding you systematically through the repair procedures.
2. ComPair allows very detailed diagnostics (on I²C level) and is therefore capable of accurately indicating problem areas.

You do not have to know anything about I²C commands yourself because ComPair takes care of this.

3. ComPair speeds up the repair time since it can automatically communicate with the chassis (when the microprocessor is working) and all repair information is directly available. When ComPair is installed together with the Force/SearchMan electronic manual of the defective chassis, schematics and PWBs are only a mouse click away.

Specifications

ComPair consists of a Windows based fault finding program and an interface box between PC and the (defective) product. The ComPair interface box is connected to the PC via a serial (or RS-232) cable.

For this chassis, the ComPair interface box and the TV communicate via a bi-directional service cable via the service connector(s).

The ComPair fault finding program is able to determine the problem of the defective television. ComPair can gather diagnostic information in two ways:

- Automatically (by communicating with the television): ComPair can automatically read out the contents of the entire error buffer. Diagnosis is done on I²C/UART level. ComPair can access the I²C/UART bus of the television. ComPair can send and receive I²C/UART commands to the micro controller of the television. In this way, it is possible for ComPair to communicate (read and write) to devices on the I²C/UART buses of the TV-set.
- Manually (by asking questions to you): Automatic diagnosis is only possible if the micro controller of the television is working correctly and only to a certain extent. When this is not the case, ComPair will guide you through the fault finding tree by asking you questions (*e.g. Does the screen give a picture? Click on the correct answer: YES / NO*) and showing you examples (*e.g. Measure test-point 17 and click on the correct oscillogram you see on the oscilloscope*). You can answer by clicking on a link (*e.g. text or a waveform picture*) that will bring you to the next step in the fault finding process.

By a combination of automatic diagnostics and an interactive question / answer procedure, ComPair will enable you to find most problems in a fast and effective way.

How to Connect

This is described in the chassis fault finding database in ComPair.

Caution: It is compulsory to connect the TV to the PC as shown in the picture below (with the ComPair interface in between), as the ComPair interface acts as a level shifter. If one connects the TV directly to the PC (via UART), ICs will be blown!

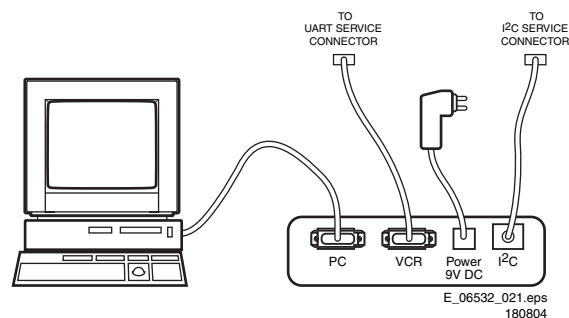


Figure 5-5 ComPair interface connection

How to Order

ComPair order codes (US):

- ComPair Software: ST4191.
- ComPair Interface Box: 4822 727 21631.
- AC Adapter: T405-ND.
- ComPair Quick Start Guide: ST4190.
- ComPair interface extension cable: 3139 131 03791.
- ComPair UART interface cable: 3122 785 90630.

Note: If you encounter any problems, contact your local support desk.

5.4.2 LVDS Tool**Introduction**

This service tool (also called "ComPair Assistant 1") may help you to identify, in case the TV does not show any picture, whether the Small Signal Board (SSB) or the display of a Flat TV is defective.

Furthermore it is possible to program EPLDs with this tool (Byteblaster). Read the user manual for an explanation of this feature.

Since 2004, the LVDS output connectors in our Flat TV models are standardised (with some exceptions). With the two delivered LVDS interface cables (31p and 20p) you can cover most chassis (in special cases, an extra cable will be offered).

When operating, the tool will show a small (scaled) picture on a VGA monitor. Due to a limited memory capacity, it is not possible to increase the size when processing high-resolution LVDS signals ($\geq 1280 \times 768$). Generally this tool is intended to determine if the SSB is working or not. Thus to determine if LVDS, RGB, and sync signals are okay.

How to Connect

Connections are explained in the user manual, which is delivered with the tool.

Note: To use the LVDS tool, you must have ComPair release 2004-1 (or later) on your PC (engine version $\geq 2.2.05$). For every TV type number and screen size, one must choose the proper settings via ComPair. The ComPair file will be updated regularly with new introduced chassis information.

How to Order

- LVDS tool (incl. two LVDS cables: 31p and 20p): 3122 785 90671.
- Service Manual LVDS tool: 3122 785 00810.

5.5 Error Codes

The error code buffer contains all errors detected since the last time the buffer was erased. The buffer is written from left to right. When an error occurs that is not yet in the error code buffer, it is displayed at the left side and all other errors shift one position to the right.

5.5.1 How to Read the Error Buffer

You can read the error buffer in 3 ways:

- On screen via the SAM (if you have a picture).

Examples:

- ERROR: 0 0 0 0 0 : No errors detected
- ERROR: 6 0 0 0 0 : Error code 6 is the last and only detected error
- ERROR: 9 6 0 0 0 : Error code 6 was detected first and error code 9 is the last detected (newest) error
- Via the blinking LED procedure (when you have no picture). See "The Blinking LED Procedure".
- Via ComPair.

5.5.2 How to Clear the Error Buffer

The error code buffer is cleared in the following cases:

- By using the CLEAR command in the SAM menu:
 - To enter SAM, press the following key sequence on the remote control transmitter: "062596" directly followed by the OSD/STATUS button (do not allow the display to time out between entries while keying the sequence).
 - Make sure the menu item CLEAR is highlighted. Use the MENU UP/DOWN buttons, if necessary.
 - Press the MENU RIGHT button to clear the error buffer. The text on the right side of the "CLEAR" line will change from "CLEAR?" to "CLEARED"
- If the contents of the error buffer have not changed for 50 hours, the error buffer resets automatically.

Note: If you exit SAM by disconnecting the mains from the television set, the error buffer is not reset.

5.5.3 Error Codes

In case of non-intermittent faults, write down the errors present in the error buffer and clear the error buffer before you begin the repair. This ensures that old error codes are no longer present.

If possible, check the entire contents of the error buffer. In some situations, an error code is only the result of another error and not the actual cause of the problem (for example, a fault in the protection detection circuitry can also lead to a protection).

Table 5-1 Error code overview

Error	Device	Error Description	Check Item	Diagram
0	Not applicable	No Error		
1	Not applicable	Mis-match of TV Hercules SW and Scaler SW	-	-
2	Not applicable	-	-	-
3	Not applicable	-	-	-
4	Genesis Scaler Flash-ROM	I ² C error while communicating with the Genesis Scaler and/or Flash-ROM is faulty/empty	7801 7B01	B7 + B8 B10
5	Scaler supply 7752	+5V protection	7752	B6
6	Not applicable	General I ² C error	1102, 7L04, 7M00	B1 + B18 + B19
7	ADC	I ² C error	7L04	B18
8	Scaler EEPROM	I ² C error while communicating with the Scaler EEPROM	7C01	B11
9	Hercules EEPROM	I ² C error while communicating with the Hercules EEPROM (NVM for TV). Remark: when the Hercules EEPROM is defective, the Hercules should operate with its default values.	7207	B2
10	Tuner	I ² C error while communicating with the PLL tuner	1102, F102, F104, F107	B1
11	Columbus	I ² C error while communicating with the 2D/3D combfilter Columbus	7M00	B19
12	Not applicable	-	-	-
13	HDMI Panellink Receiver/Decoder	I ² C error while communicating with the iBoard HDMI Panellink Receiver/Decoder (only in NAFTA and AP sets)	7D03	B12 (only in NAFTA and AP sets)
14	Scaler SDRAM	Read-write error with the Scaler SDRAM	7B01	B10
15	Not applicable	-	-	-
16	EPLD	I ² C error while communicating with EPLD	7N02	B20 + B21
17	Digital Module (only on Digital sets)	I ² C error while communicating with the Digital Module (only on Digital sets)	Digital Module (only on Digital sets)	
18	Not applicable	-	-	-

5.6 The Blinking LED Procedure

Using this procedure, you can make the contents of the error buffer visible via the front LED. This is especially useful when there is no picture.

When the SDM is entered, the front LED will blink the contents of the error-buffer:

- The LED blinks with as many pulses as the error code number, followed by a time period of 1.5 seconds, in which the LED is "off".
- Then this sequence is repeated.

Any RC5 command terminates this sequence.

Example of error buffer: 12 9 6 0 0

After entering SDM, the following occurs:

- 1 long blink of 5 seconds to start the sequence,
- 12 short blinks followed by a pause of 1.5 seconds,
- 9 short blinks followed by a pause of 1.5 seconds,
- 6 short blinks followed by a pause of 1.5 seconds,
- 1 long blink of 1.5 seconds to finish the sequence,
- The sequence starts again with 12 short blinks.

5.7 Fault Finding and Repair Tips

Notes:

- It is assumed that the components are mounted correctly with correct values and no bad solder joints.
- Before any fault finding actions, check if the correct options are set.

5.7.1 NVM Editor

In some cases, it can be handy if one directly can change the NVM contents. This can be done with the "NVM Editor" in SAM mode. With this option, single bytes can be changed.

Caution:

- **Do not change the NVM settings without understanding the function of each setting, because incorrect NVM settings may seriously hamper the correct functioning of the TV set!**
- **Do not change the Scaler NVM settings, as this will hamper the DVI functionality of the TV set!**
- Always note down the existing NVM settings, before changing the settings. This will enable you to return to the original settings, if the new settings turn out to be incorrect.

Table 5-2 NVM editor overview

	Hex	Dec	Description
.ADR	0x000A	10	Existing value
.VAL	0x0000	0	New value
.Store	Store?		

Table 5-3 NVM Default values (option bit settings through NVM Editor in SAM Mode)

Byte Nr.	Bit	Feature/Mode	Description	42PF7320/28
Byte 0 174(dec)	0	QSS (LSB)	Mode of quasi split sound amplifier	0
	1	FMI	Connection of output of QSS amplifier	0
	2	HCO	EHT tracking mode	0
	3	HP2	Synchronization of OSD/Text display	1
	4	FSL	Forced slicing level for vertical sync	1
	5	TFR	DC transfer ratio of luminance signal	1
	6	OSVE	Black current measuring in overscan	0
	7	MVK (MSB)	(For Future Usage, as defined by software)	0
		Total Dec Values		56
		Total Hex Values		38
Byte 1 175(dec)	0	PSE	PSE	0
	1	OPC	OPC	0
	2	PRIS	PRIS	0
	3	CONTINUOUS FACTORY	Continuous factory mode	1
	4	WHITE PATTERN ON	Last colour pattern status in factory mode	0
	5	SDM MODE	Service default mode on/off	0
	6	SAM MODE	Service Align mode on/off	0
	7	SVMA	Scavem On / Off	0
		Total Dec Values		8
		Total Hex Values		08
Byte 2 176(dec)	0	MUTE STATUS	Mute status	0
	1	TUNER AUTO MODE	Auto mode	1
	2	CABLE MODE	Cable/Antenna mode	0
	3	LAST POWER MODE	Last power status of the set	1
	4	CHILD LOCK MODE	Child lock enabled	0
	5	SURF MODE	Surf mode on/off	0
	6	FACTORY MODE	Factory mode on	1
	7	PSNS	For PAL colour enhancement in ES4	1
		Total Dec Values		202
		Total Hex Values		CA
Byte 3 177(dec)	0	RADIO/TV MODE	Radio mode or TV mode	0
	1	WAKE-UP MODE	WAKE-UP MODE	0
	2	HOTEL MODE	TV in Hotel mode	0
	3	HOTEL KBD LOCK	Keyboard locked	0
	4	HBL	HBL	0
	5	BLS	Blue stretch mode	1
	6	SL	SL	0
	7	CFA0	Comb filter On/Off	0
		Total Dec Values		32
		Total Hex Values		20
Byte 4 178(dec)	0	Signal Strength	Signal Strength Switch in MK2	0
	1	LPG	LPG	0
	2	DVD TRAY LOCK	Lock/Unlock DVD tray	0
	3	SCRSAVER MODE	Screen saver mode	1
	4	BKS	Black Stretch Mode	1
	5	BSD	Black Stretch Depth	1
	6	CRA0	Coring on SVM	1
	7	PIP QSS	PIP QSS	0
		Total Dec Values		120
		Total Hex Values		78

Byte Nr.	Bit	Feature/Mode	Description	42PF7320/28
Byte 5 179(dec)	0	FFI	Fast Filter	0
	1	NNR	No red reduction during blue stretch	1
	2	MUS	NTSC matrix	1
	3	GAM	Gamma control	1
	4	CBS	Control sequence of beam current limiting	0
	5	LLB	Low level of beam current limiter	0
	6	DSA	Dynamic skin tone angle area	1
	7	DSK	Dynamic skin tone angle on/ off	0
		Total Dec Values		78
		Total Hex Values		4E
Byte 6 180(dec)	0	LTI status	LTI last status	0
	1	Inc_Life_Time	Inc_Life_Time	0
	2	PC_Mode	PC_Mode	0
	3	HD_Mode	HD_Mode	0
	4	Tact_Switch	Tact_Switch	0
	5	Set_In_Special_Stby	Set_In_Special_Stby	0
	6	Hotel_OSDDisplay	Hotel_OSDDisplay	0
	7	Hotel_MonitorOut	Hotel_MonitorOut	0
		Total Dec Values		0
		Total Hex Values		00
Byte 7 181(dec)	0	Hotel_IconMode	Hotel_IconMode	0
	1	DBE	DBE	1
	2	SD	SD	0
	3	Set_in_PC_Sleep_Mode	Set_in_PC_Sleep_Mode	0
	4	Reserved	Reserved	0
	5	Reserved	Reserved	0
	6	Reserved	Reserved	0
	7	Reserved	Reserved	0
		Total Dec Values		2
		Total Hex Values		02

5.7.2 Load Default NVM Values

In case a blank NVM is placed or when the NVM content is corrupted, default values can be downloaded into the NVM. (For empty NVM replacement, short the SDM with a jumper and apply the mains voltage. Remember to remove the jumper after the reload is completed). After the default values are downloaded, it will be possible to start up and to start aligning the TV set. This is no longer initiated automatically; to initiate the download the following action has to be performed:

1. Switch "off" the TV set by disconnecting the AC Power plug.
2. Short circuit the SDM jumpers (keep short-circuited).
3. Press P+ or Ch+ on the local keyboard (and keep it pressed).
4. Switch on the TV set via the AC Power plug.
5. Keep pressing the P+/Ch+ button until the set has started up and the SDM is shown.

Alternative method:

1. Go to SAM.
2. Select NVM Editor (not SC NVM Editor).
3. Select ADR (address) to 1 (dec).
4. Change the VAL (value) to 170 (dec).
5. Store the value.
6. Disconnect the mains plug and wait for a few seconds.
7. Reconnect the mains plug and wait until the set goes into its standby mode (red LED lights up).
8. Restart the set.

5.7.3 Tuner and IF

No Picture in RF Mode, but there is a Noise Raster

1. Check whether picture is present in AV. If not, go to Video processing troubleshooting section.
2. If present, check if the Option settings are correct.
3. Check if all the supply voltages are present (3.3/5/8/12/33 V).
4. Check if the I²C lines are working correctly (3.3 V).
5. Manually store a known channel and check if there is IF output at Tuner pin 11.
6. Check the tuning DC voltage at pin 2 of the Tuner. The DC voltage should vary according to the frequency/channel being chosen.
7. If the tuning voltage is OK, check the tuner output, pin 11.
8. If it has no output, the Tuner may have a defect. Change the Tuner.

Required System is not Selected Correctly

Check whether a Service jumper (#4204 & 4205, 0805 size) is present. If yes, remove it.

5.7.4 Video Processing

No Power

1. Check +12 V and 3V3 at position 1J02.
2. If no supply, check the connector 1J02.
3. If it is correct, check the power supply board.

Power Supply is Correct, but no Green LED

1. Check if the connectors 1K00 are properly inserted.
2. If they are inserted correctly, check if the 3V3 is present.

No Picture Display (blank screen with correct sound output)

1. Check whether the user menu is visible.
2. If the user menu is OK, activate teletext mode.
3. If teletext is OK, the problem is in the ADC (B18) & Columbus 3D combfilter (B19), if present (depending on model, see also paragraph "Teletext Path" in chapter 9).
4. If the user menu is not visible, check if the LCD panel backlight is ON.
5. If the backlight is OFF, the problem is in the power supply board or LCD panel. Also check pin 12 (LAMP_ON_OFF) of 1J02. It should be HIGH during normal operation.

Note: For fault finding purposes, it is important to know the following: in Pixel Plus and Digital Crystal Clear models, which have an ADC (B18) and Columbus 3D combfilter (B19), the digital input of the scaler is used for the digital video path (Hercules output), whereas the analogue RGB input (analogue input of the scaler) is only used for teletext. This means that no mixed mode (video plus teletext simultaneously) is possible. If there is sound and teletext, but no video and user menu (blank screen), the digital path (Hercules - ADC - Columbus - Scaler) is faulty. If there is sound but no teletext, the back-end part (Scaler - LCD panel) is faulty. In Crystal Clear models, which do not have an ADC and Columbus, the RGB path (analogue input of scaler) is used for both video and teletext.

No TV, but PC is Present

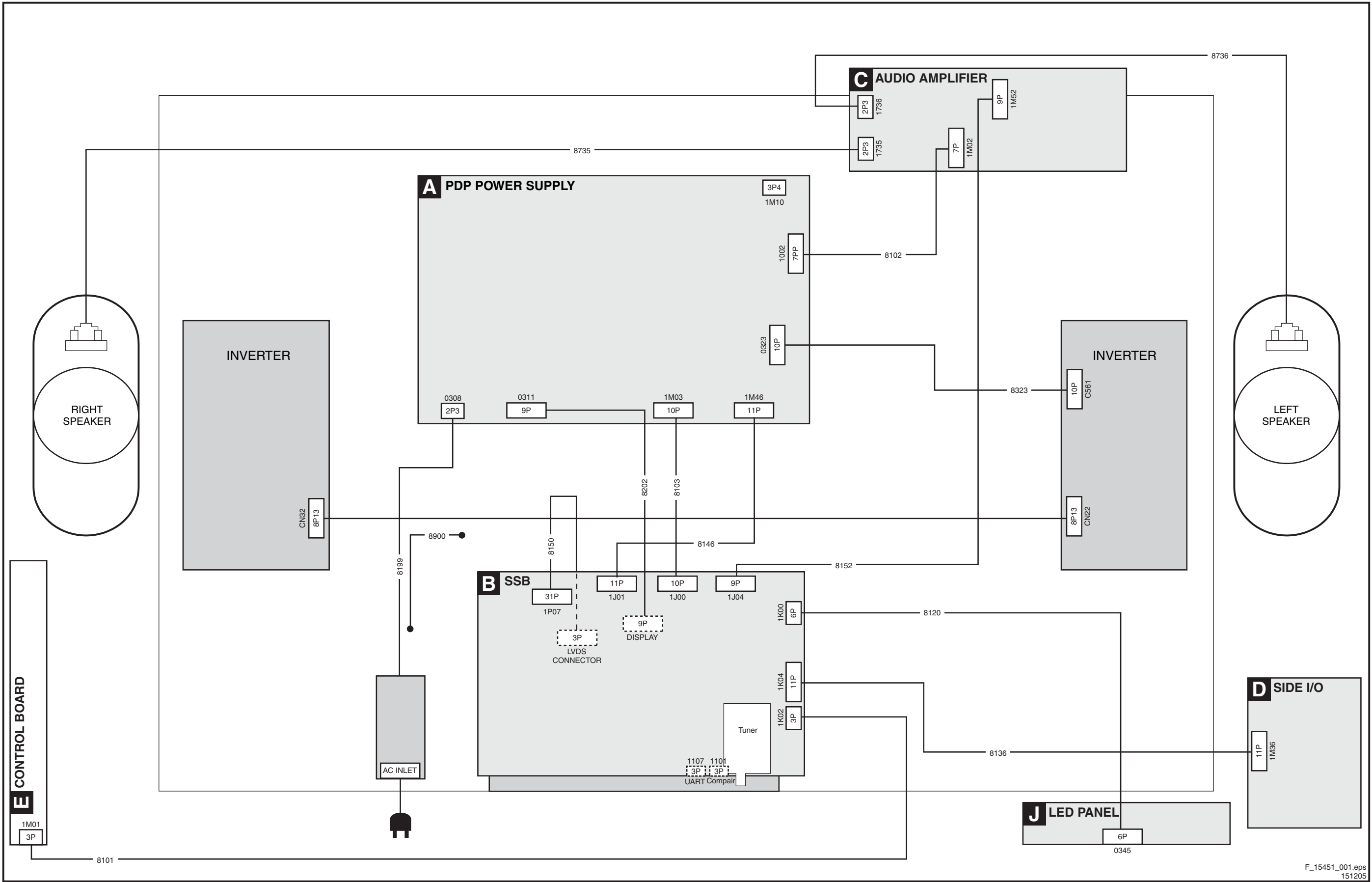
1. Check if Hsync_SDTV and Vsync_SDTV are present at pin 1 & pin13 of 7E03.
2. If they are present, check teletext output.
3. If there is no teletext output, the IC TDA150xx may be defect.

5.7.5 Power Supply

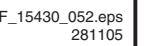
In case the power supply does not work, check (apart from the obvious fuse-check) if the oscillators in IC7001 (in TV sets with 37 inch screens) or in IC7001 and IC7U01 (in TV sets with 42 inch screens) are working. If not, replace the ICs.

6. Block Diagrams, Test Point Overviews, and Waveforms

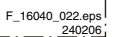
Wiring Diagram 42" FHP
WIRING 42" FHP



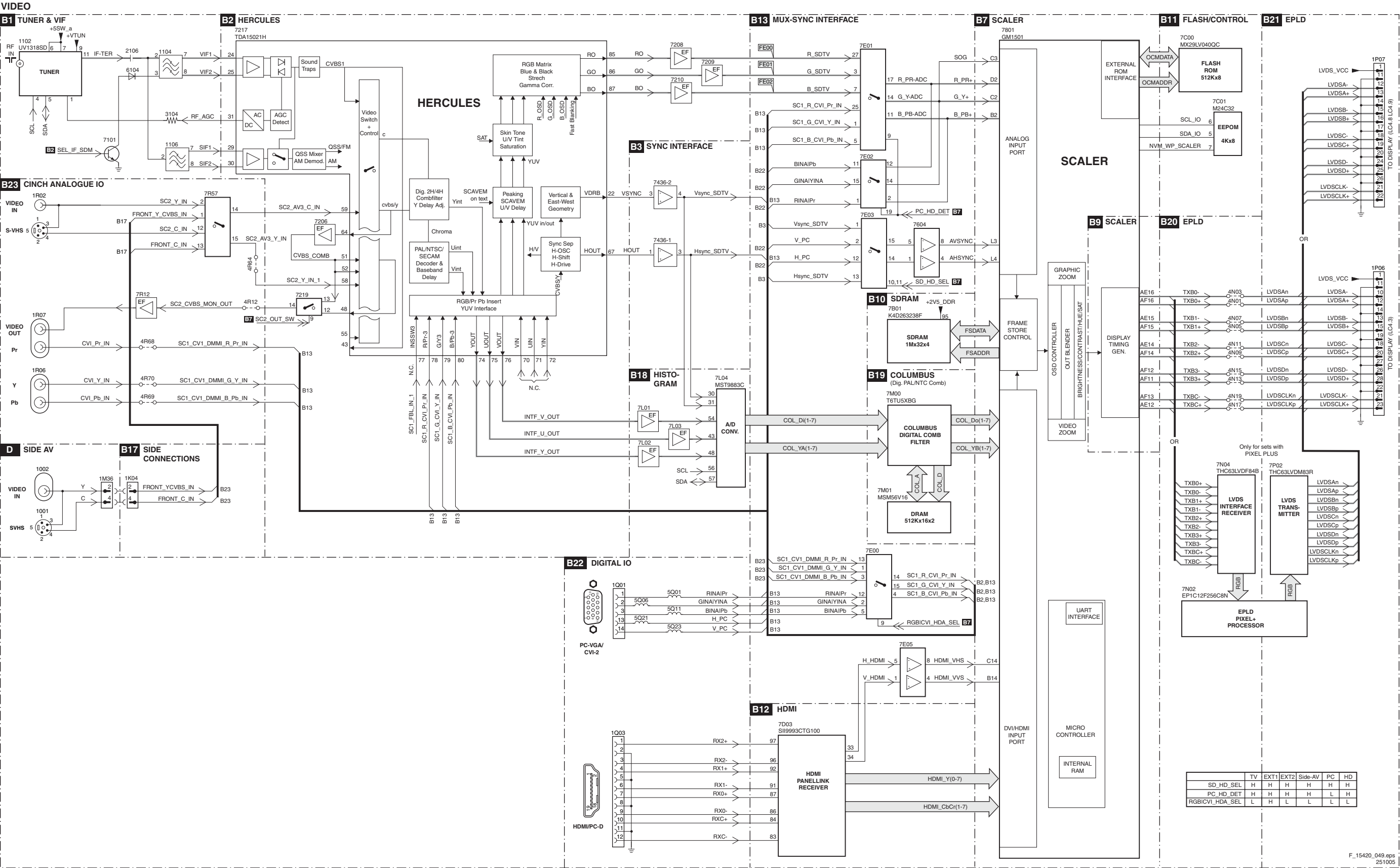
WIRING 42" SDI



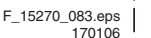
A2 FILTERS STANDBY



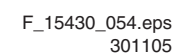
Block Diagram Video



I²C

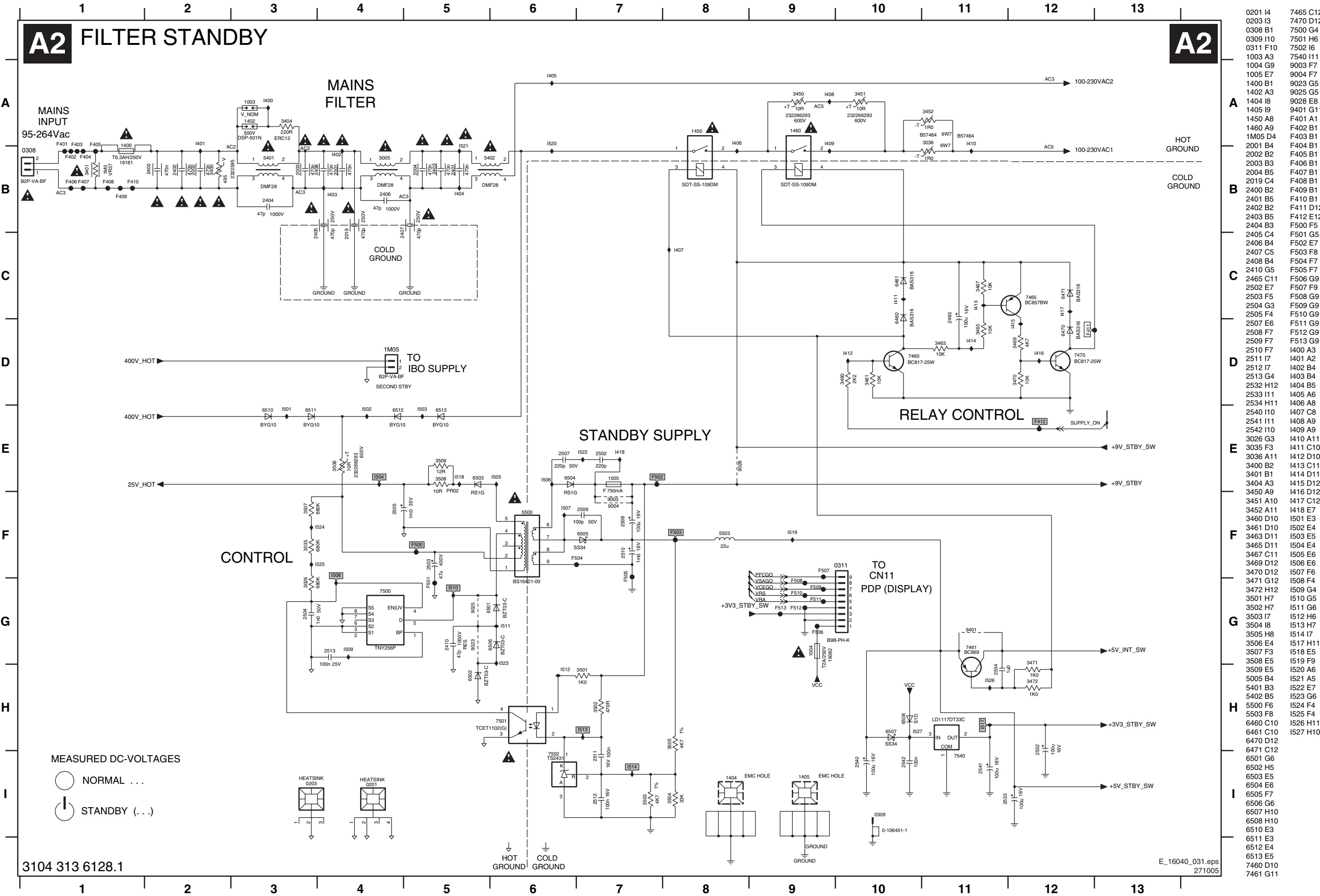


SUPPLY LINE OVERVIEW

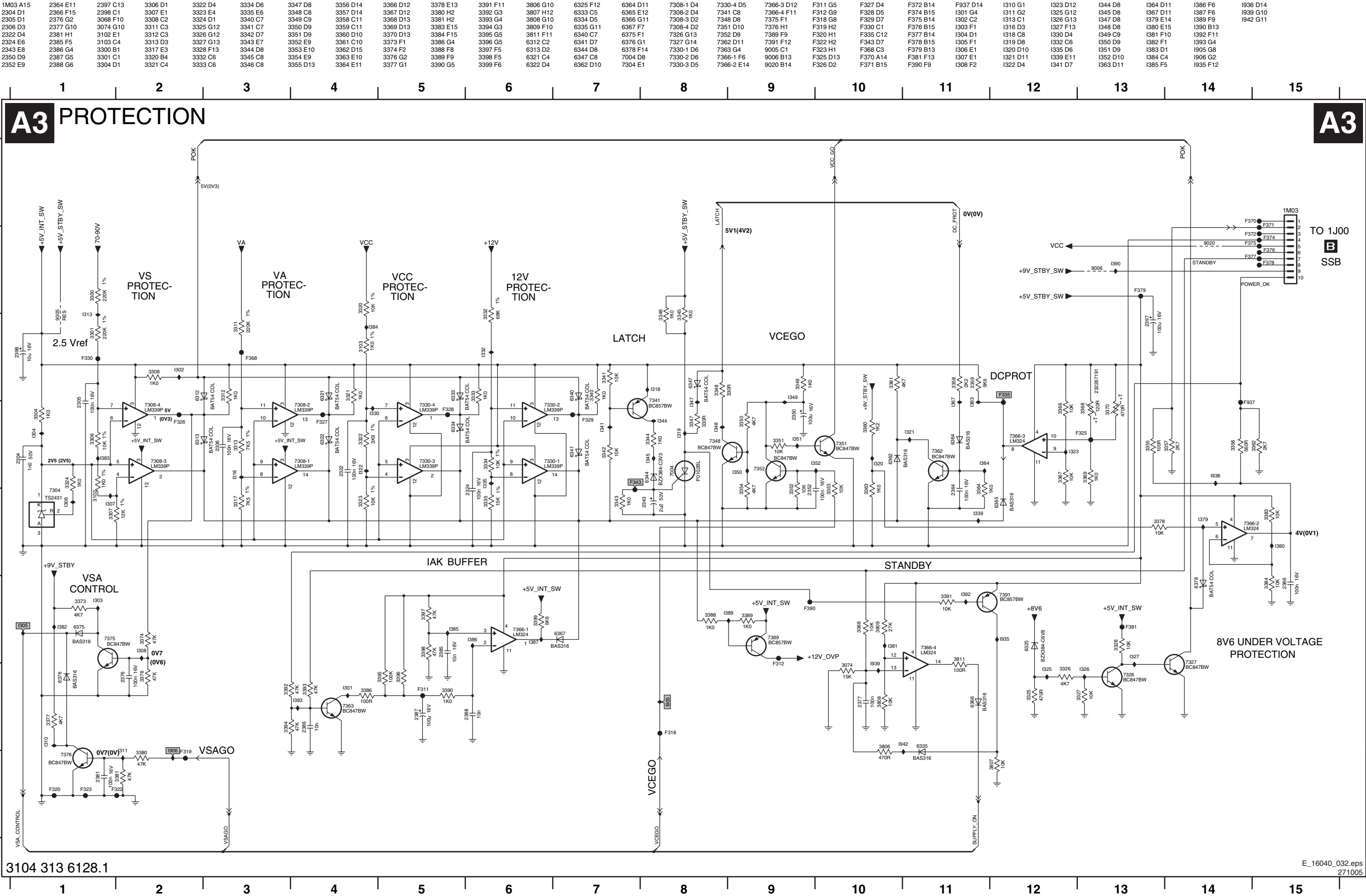


7. Circuit Diagrams and PWB Layouts

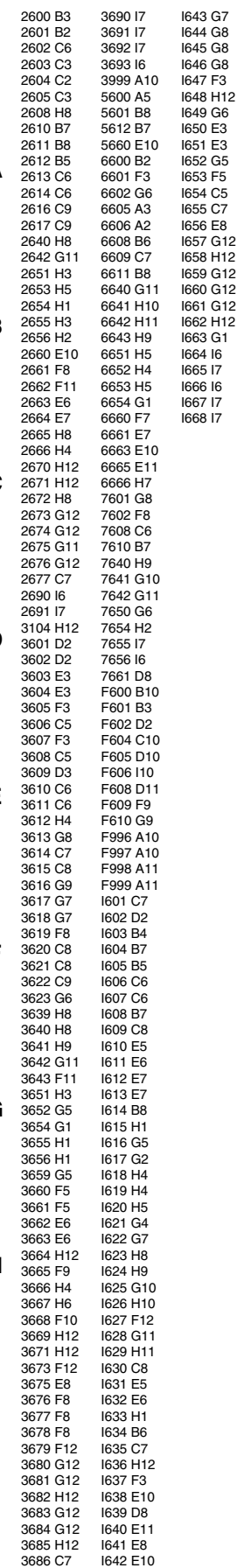
PDP FHP Supply: Filter Standby



PDP FHP Supply: Protection

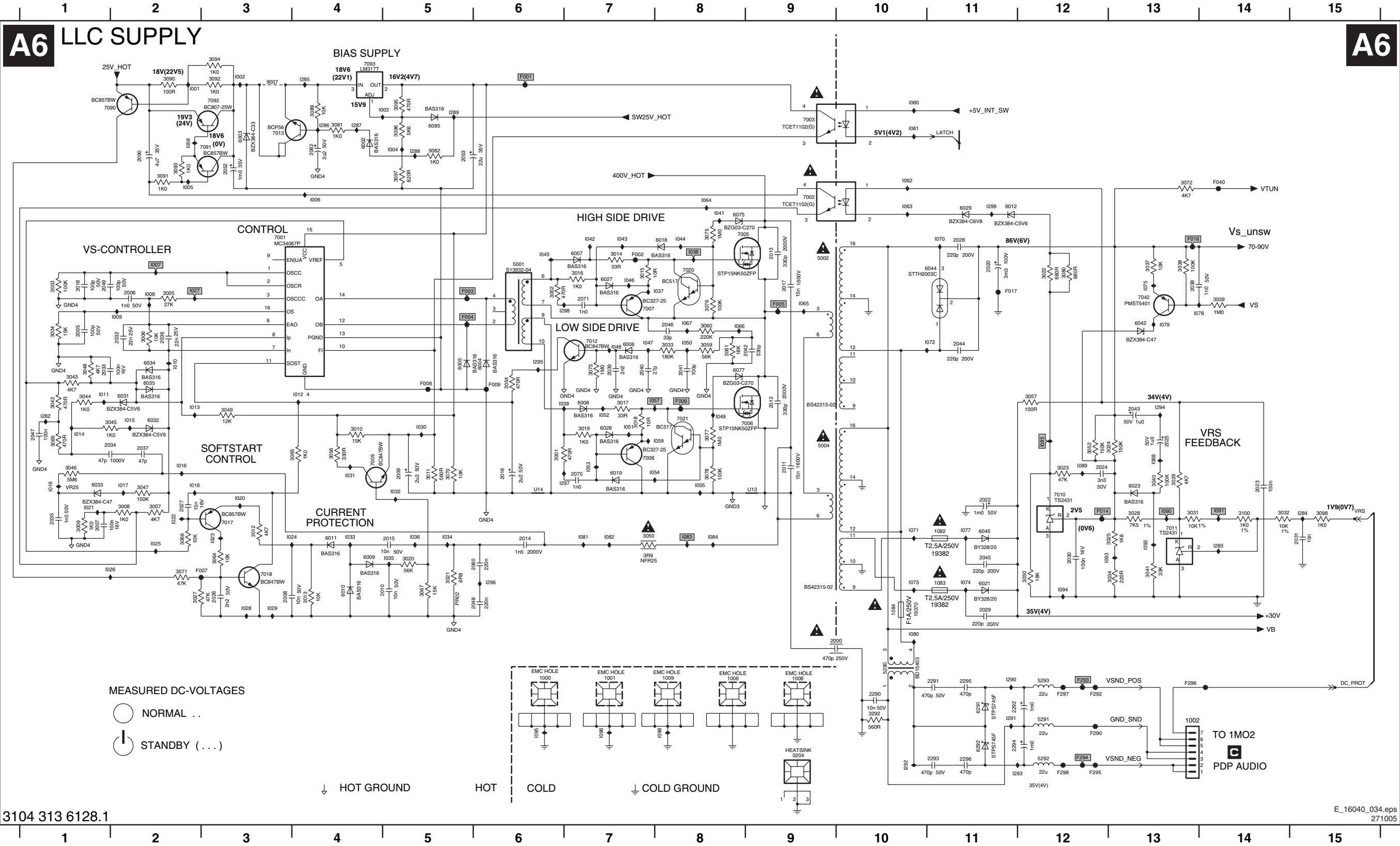


A5 PRECONDITIONER

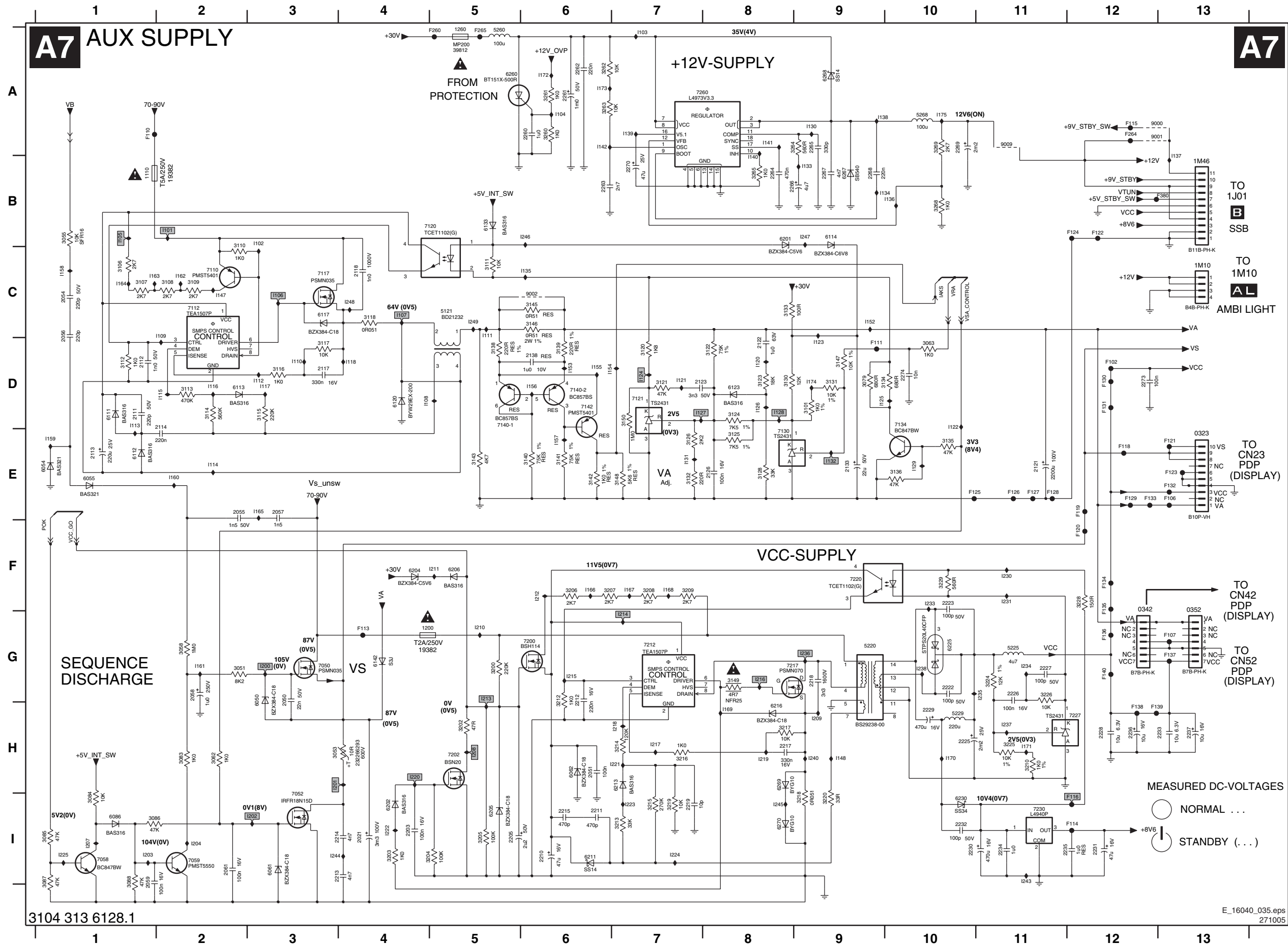


PDP FHP Supply: LLC Supply

U13 E9	1083 F11	2012 D9	2024 E12	2034 E1	2044 D11	2070 E7	3001 E6	3011 E5	3021 F5	3032 F14	3044 D1	3057 D12	3071 F2	3089 A4	3100 F14	6003 A3	6018 C8	6034 D2	7001 B3	7012 D7	7093 A4	F009 D6	F296 G13	I008 C2	I018 E2	I028 G3	I038 C8	I049 D8	I060 A10	I072 D11	I083 F8	I095 H6	I289 A5	I299 B11
U14 E6	1084 G10	2013 C9	2025 E13	2035 F1	2045 F11	2071 C7	3002 C6	3012 F3	3022 C12	3033 D8	3045 E2	3059 D8	3072 B13	3090 A2	3292 H10	6004 D6	6019 E7	6035 D2	7002 B9	7013 A3	7097 A3	F014 E12	F297 H12	I009 C2	I019 E1	I029 G3	I039 D6	I050 D8	I061 A10	I073 F10	I084 F8	I096 H7	I290 G11	
0204 H9	2000 G9	2014 F6	2026 F3	2036 D2	2046 C8	2090 B2	3003 C1	3013 F4	3023 E12	3034 F13	3046 E1	3060 C8	3073 D7	3091 B2	5001 C6	6005 D5	6021 F11	6042 C13	7003 A9	7017 F3	7098 A4	F016 B13	F298 H12	I010 D2	I020 E3	I030 E5	I041 B8	I051 E7	I062 B10	I074 F11	I085 E12	I098 H8	I291 H11	
1000 G6	2005 C1	2015 F5	2027 E2	2037 E2	2047 E1	2290 H10	3004 C1	3014 C7	3024 E13	3037 C13	3047 E2	3061 D8	3075 B8	3092 A3	5002 C9	6006 D7	6023 E13	6044 C11	7005 B8	7018 F3	7099 A4	F002 C7	F299 H12	I011 A2	I021 E1	I031 E4	I042 B7	I052 D7	I063 B10	I075 C13	I086 E13	I282 D1	I292 H10	
1001 G7	2006 C2	2016 E6	2028 C11	2038 C13	2048 F6	2291 G11	3005 C2	3015 C7	3025 F13	3038 C13	3048 D1	3064 F3	3078 C8	3093 B2	5004 E9	6007 C7	6027 C7	6045 F11	7006 E8	7020 C8	7098 A4	F003 C5	F294 H12	I012 D4	I022 F2	I032 E5	I043 B7	I053 E7	I064 B8	I077 F11	I088 E12	I283 F14	I293 H11	
1002 H14	2007 F1	2017 C9	2029 G11	2039 D7	2049 C1	2292 H11	3006 D2	3016 C7	3027 F2	3039 C14	3049 D3	3065 E4	3077 E8	3094 A3	5290 G10	6008 D7	6028 E7	6045 B8	7007 C7	7021 D8	7098 A4	F004 C5	F290 H12	I013 D2	I023 F3	I033 F4	I044 B8	I054 E7	I065 C9	I078 C13	I090 E13	I284 E15	I294 D13	
1006 G8	2008 F3	2018 C1	2030 F12	2040 D7	2052 B3	2293 H11	3007 E2	3017 D7	3028 F13	3040 E13	3050 F7	3066 F2	3078 E8	3095 A5	5291 H12	6009 F4	6029 B11	6077 D8	7008 E7	7042 C13	7098 A4	F005 C9	F292 H12	I014 E1	I024 F3	I034 F5	I045 C6	I055 E8	I066 C8	I079 C13	I091 E14	I285 A4	I295 D6	
1008 G9	2009 E5	2020 C11	2031 F15	2041 D8	2053 B5	2294 H11	3008 E2	3018 D7	3029 H12	3041 F13	3052 E12	3067 F5	3080 C12	3096 A5	5292 H12	6010 F4	6031 D2	6095 A5	7009 E4	7099 A4	F006 D8	F293 H12	I015 B2	I025 F2	I035 F5	I046 C7	I056 A2	I067 C8	I080 G10	I092 F13	I286 A4	I296 F6		
1009 G8	2010 F5	2022 E11	2032 D2	2042 D9	2060 F6	2295 G11	3009 F1	3019 E7	3030 F12	3042 D1	3054 D6	3069 E1	3081 A4	3097 B5	5293 G12	6011 F4	6032 D2	6291 H11	7010 E12	7099 A4	F007 F3	F294 H12	I016 E2	I026 F1	I036 F5	I047 D7	I057 D7	I070 B11	I081 F7	I093 F12	I287 A4	I297 E7		
1082 F11	2011 E9	2023 E14	2033 D1	2043 D13	2062 A4	2296 H11	3010 E4	3020 F5	3031 F13	3043 D1	3056 E4	3070 E5	3082 B5	3098 F15	6002 A4	6012 B11	6033 E1	6292 H11	7011 F13	7092 A3	F008 D5	F295 H12	I017 E2	I027 C2	I037 C8	I048 D7	I059 E8	I071 F10	I082 F7	I094 F12	I288 B5	I298 C7		



PDP FHP Supply: AUX Supply



0323 E13	3156 B11	F136 G12
0342 G12	3157 D11	F137 G13
0352 G13	3158 D11	F138 H12
1110 B1	3200 G5	F139 H12
1200 G4	3202 H5	F140 G12
1260 A5	3203 I4	F260 A5
1M10 C13	3204 I5	F264 A12
1M46 B13	3205 I5	F265 A5
2021 I4	3206 F6	F380 B13
2050 G3	3207 F6	I101 B2
2051 H6	3208 F7	I102 B3
2054 C1	3209 F7	I103 A7
2055 E2	3210 H11	I104 A6
2056 C1	3212 G6	I105 B1
2057 E3	3213 I7	I106 C3
2058 G2	3214 H7	I107 C4
2059 I1	3215 I7	I108 D4
2061 I2	3216 H7	I109 C2
2111 D1	3217 H8	I110 D3
2112 D1	3218 I9	I111 C5
2113 E1	3219 I7	I112 D3
2114 E2	3220 I9	I113 D1
2117 D3	3224 G11	I114 E2
2118 C4	3225 H11	I115 D2
2121 E11	3226 G11	I116 D2
2122 D8	3228 F12	I117 D3
2123 D7	3229 D7	I118 D4
2126 E8	3260 A6	I208 D8
2133 E9	3261 A6	I212 D7
2138 D6	3262 A6	I222 D10
2203 I4	3263 A6	I233 D9
2205 I5	3264 A6	I234 D7
2210 I6	3265 B8	I235 D9
2211 I6	3268 B10	I236 D8
2212 G6	3269 A10	I237 D7
2213 I4	5121 C5	I238 D8
2214 I4	5220 G9	I239 E10
2215 I6	5225 G11	I240 A9
2217 H8	5229 H10	I241 E7
2218 G9	5260 A5	I242 E9
2219 I7	5268 A10	I243 B9
2222 G10	6050 G3	I244 B10
2223 F10	6054 E1	I245 C8
2225 H10	6055 E1	I246 B10
2228 G11	6061 I3	I247 B13
2227 G11	6062 H6	I248 A9
2228 H12	6068 I1	I249 A7
2229 H10	6111 D1	I250 B8
2230 I10	6112 E1	I251 A8
2231 I12	6113 D2	I252 A6
2232 I10	6114 B9	I253 C2
2233 H13	6117 C3	I254 H9
2234 I11	6120 D4	I255 C9
2235 I12	6123 D8	I256 D6
2236 H12	6133 B5	I257 D6
2237 H13	6142 G4	I258 D6
2260 A6	6201 B8	I259 D6
2261 A6	6202 I4	I260 E6
2262 A6	6204 F4	I261 C1
2263 B6	6205 I5	I262 E1
2264 B8	6206 F5	I263 E2
2265 A9	6211 I6	I264 I2
2266 B8	6213 H7	I265 C2
2267 B9	6216 H8	I266 C1
2268 B9	6225 G10	I267 C1
2269 A10	6230 I10	I268 E3
2270 B7	6260 A6	I269 H9
2273 D12	6267 B9	I270 F7
2274 D10	6268 A9	I271 F7
3051 G2	6269 H8	I272 H10
3053 H3	6270 I8	I273 A10
3055 B1	6271 B10	I274 D9
3058 G2	7050 G3	I275 A10
3062 H2	7052 I3	I276 B10
3063 D10	7058 I1	I277 B11
3079 D9	7059 I2	I278 B11
3083 H2	7060-1 B11	I279 B11
3084 I1	7060-2 B11	I280 B11
3085 I1	7061 C11	I281 C11
3086 I1	7110 C2	I282 C11
3087 I1	7112 C2	I283 C11
3088 I1	7117 C3	I284 C11
3101 D9	7120 B5	I285 G3
3106 C1	7121 D7	I286 I3
3107 C1	7130 E8	I287 I3
3108 C2	7134 D10	I288 I1
3109 C2	7140-1 D5	I289 I2
3110 C2	7140-2 D6	I290 I1
3111 C5	7142 D6	I291 H5
3112 D1	7200 G6	I292 H9
3113 D2	7202 H5	I293 G5
3114 D2	7212 G7	I294 F6
3115 D3	7217 G8	I295 F6
3116 D3	7220 F9	I296 G5
3117 D3	7227 H12	I297 G7
3118 C4	7230 I11	I298 G6
3120 D7	7280 A8	I299 G8
3121 D7	9000 A12	I300 H7
3122 D8	9001 A12	I301 H7
3123 D8	9002 C6	I302 H8
3124 D8	9009 A11	I303 H4
3125 E8	I102 D12	I304 H7
3126 E7	I106 E13	I305 I4
3128 E8	I107 G13	I306 I7
3130 D8	I110 A1	I307 I7
3131 D9	I111 D9	I308 I1
3132 E7	I113 G4	I309 I4
3133 C8	I114 I12	I310 I11
3134 D10	I115 A12	I311 F10
3135 I0	I116 I12	I312 G11
3136 E10	I118 E12	I313 G11
3138 D5	I119 E12	I314 G9
3139 D6	I120 F12	I315 H11
3140 E6	I121 G13	I316 G10
3141 E6	I122 B12	I317 H9
3142 E6	I123 E13	I318 I11
3143 E5	I124 B12	I319 I3
3145 C6	I125 E10	I320 I8
3146 C6	I126 H11	I321 I6
3147 D9	I127 E11	I322 B9
3148 E7	I128 E11	I323 C4
3149 G8	I129 E12	I324 C5
3150 D7	I130 D12	I325 D12
3151 B10	I131 D12	I326 G9
3152 B11	I132 E13	I327 H11
3153 B11	I133 E12	I328 G10
3154 C11	I134 F12	I329 I3
3155 C11	I135 F12	I330 F12

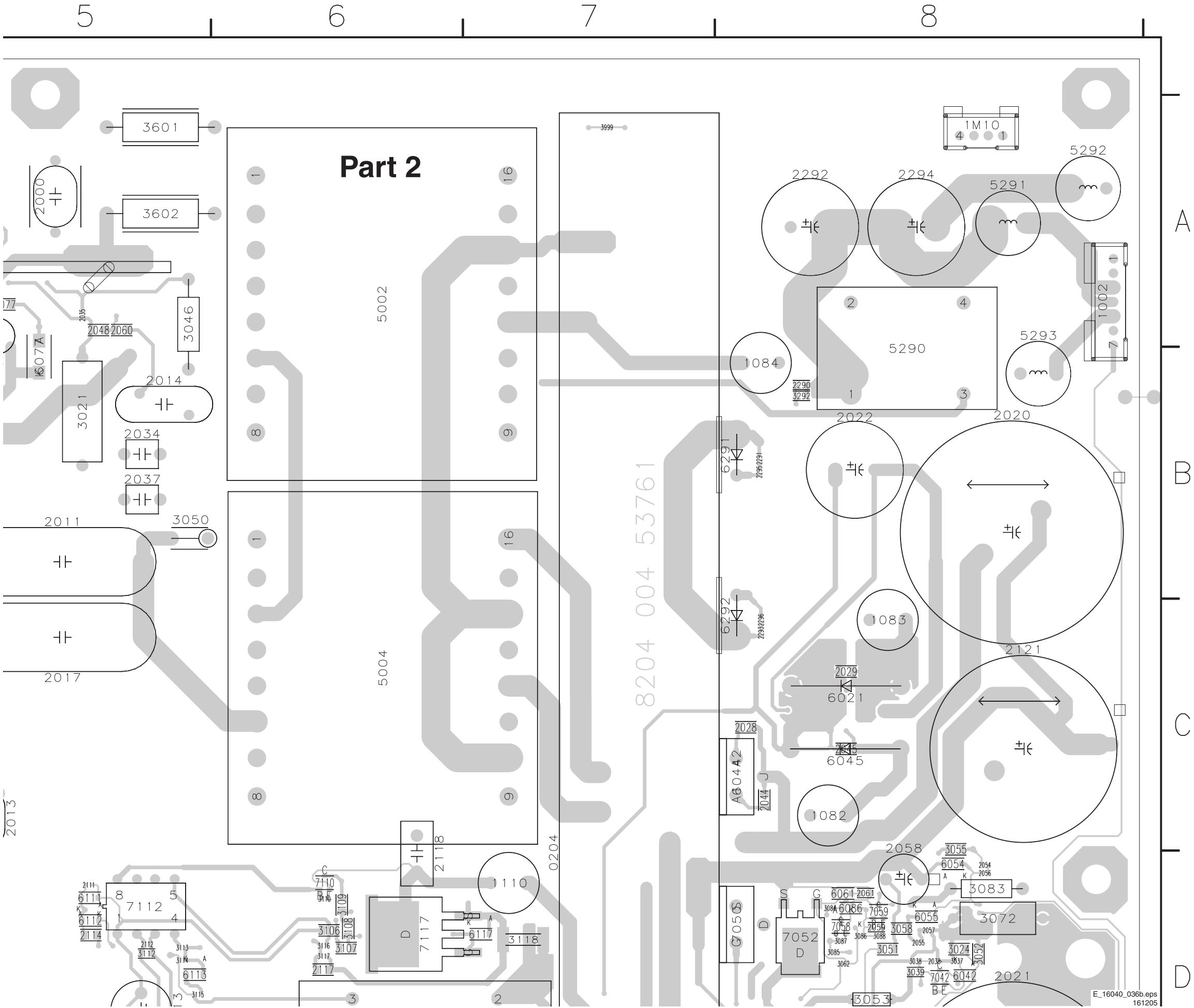
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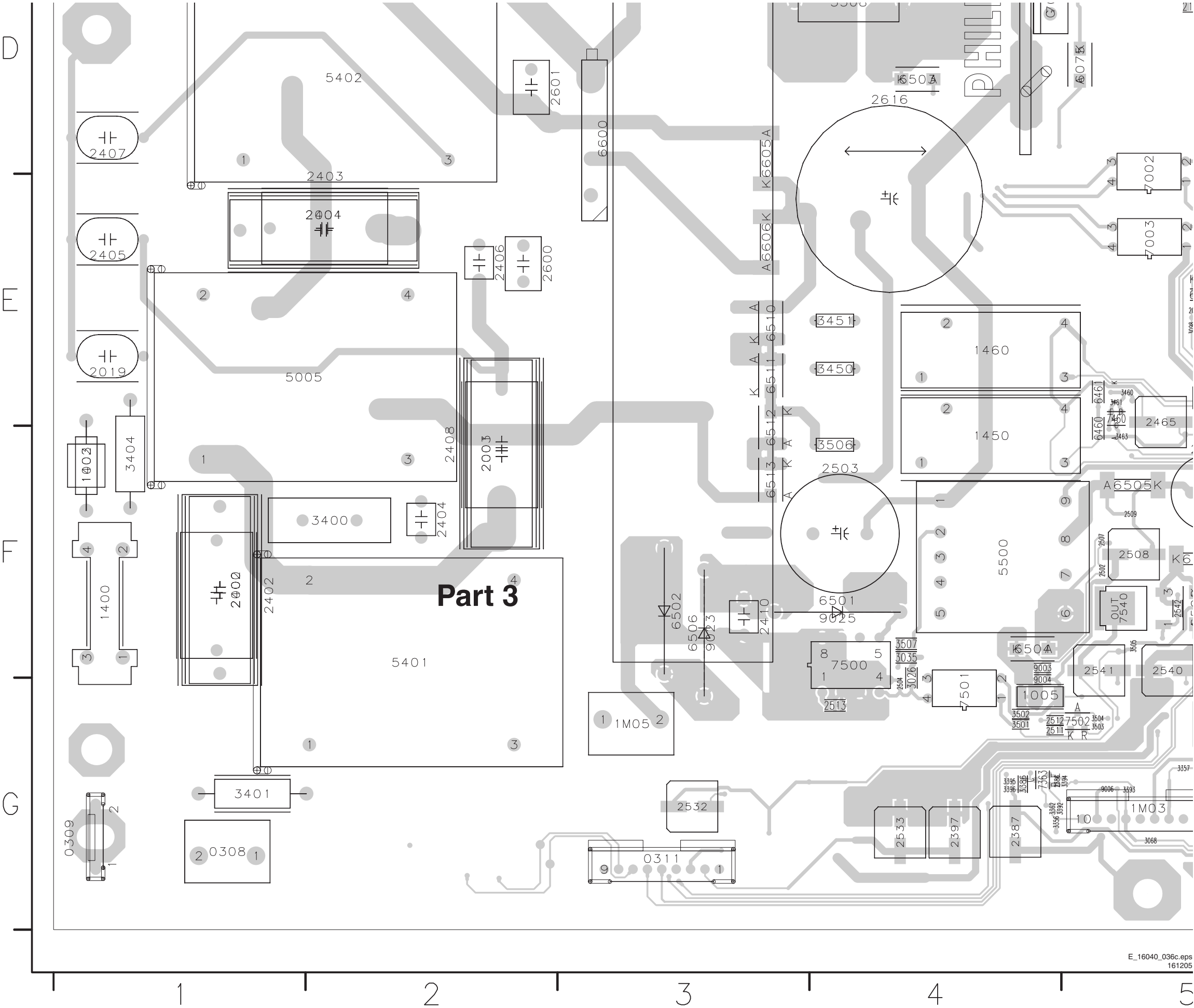
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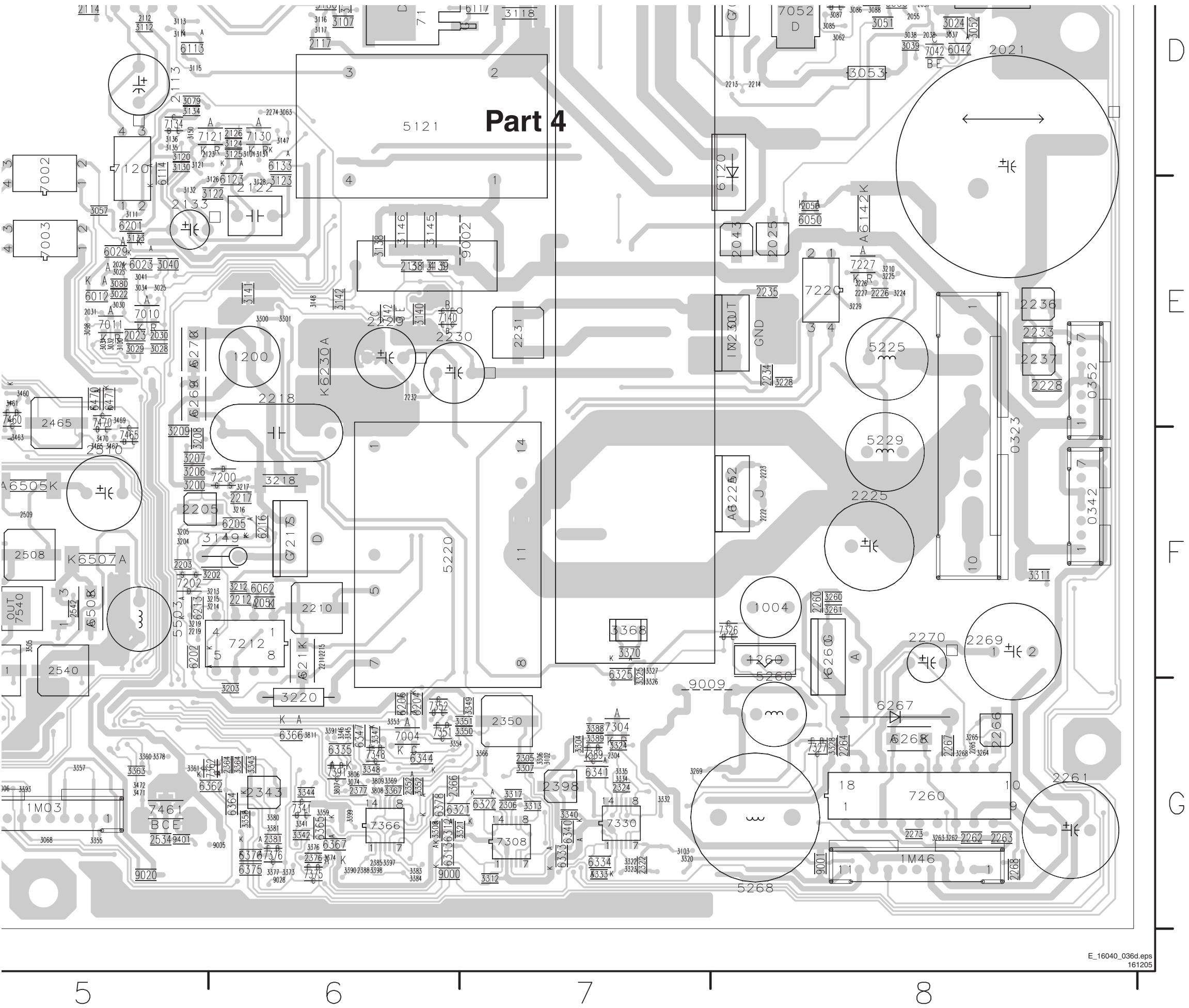
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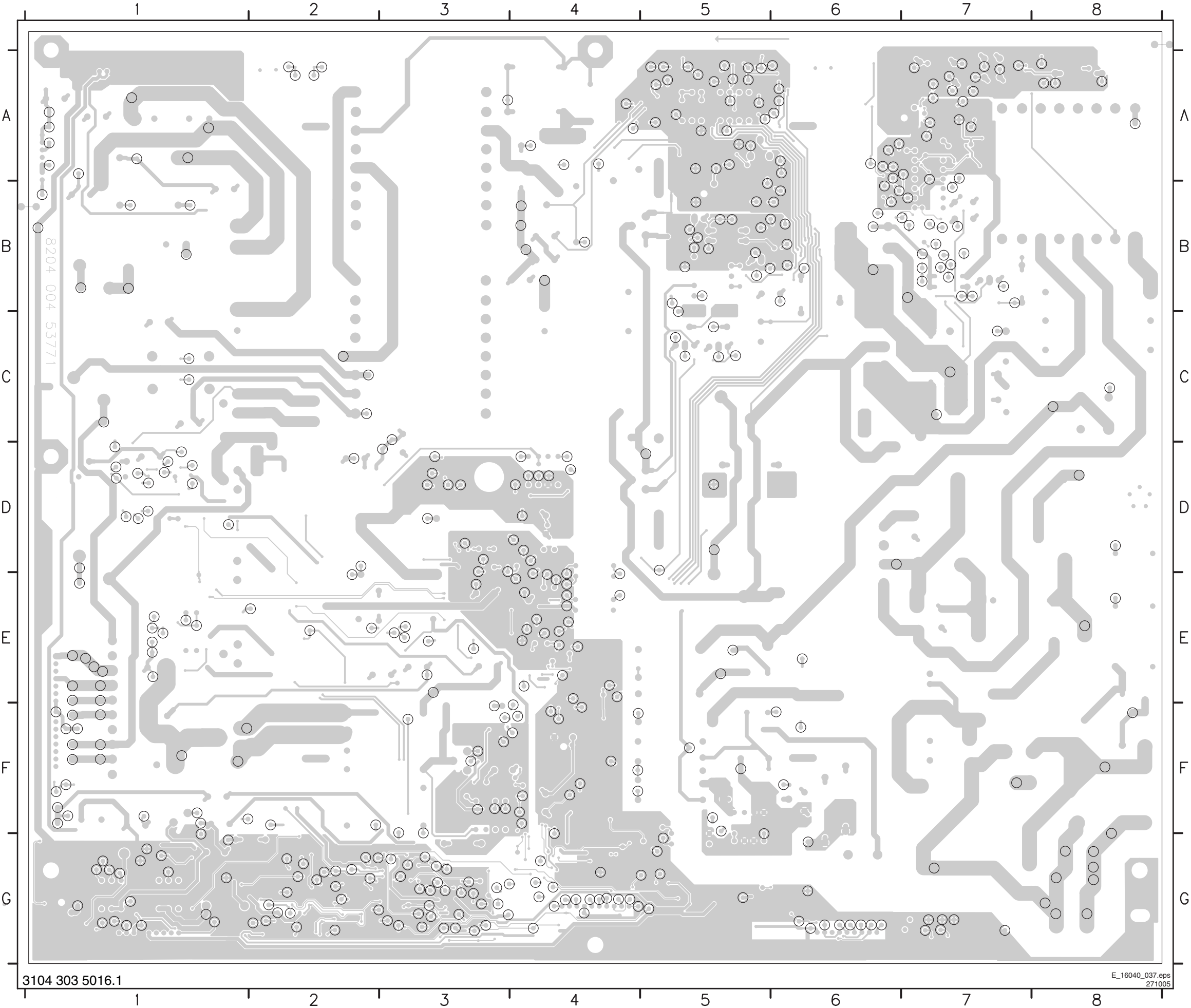
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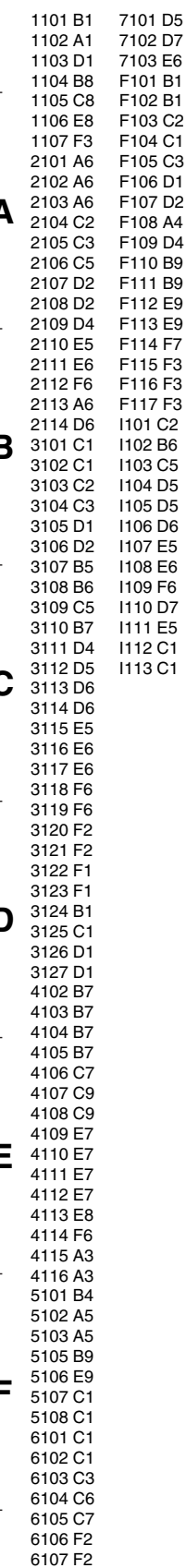
Layout PDP FHP Supply (Part 4 Top Side)



Layout PDP FHP Supply (Bottom View)



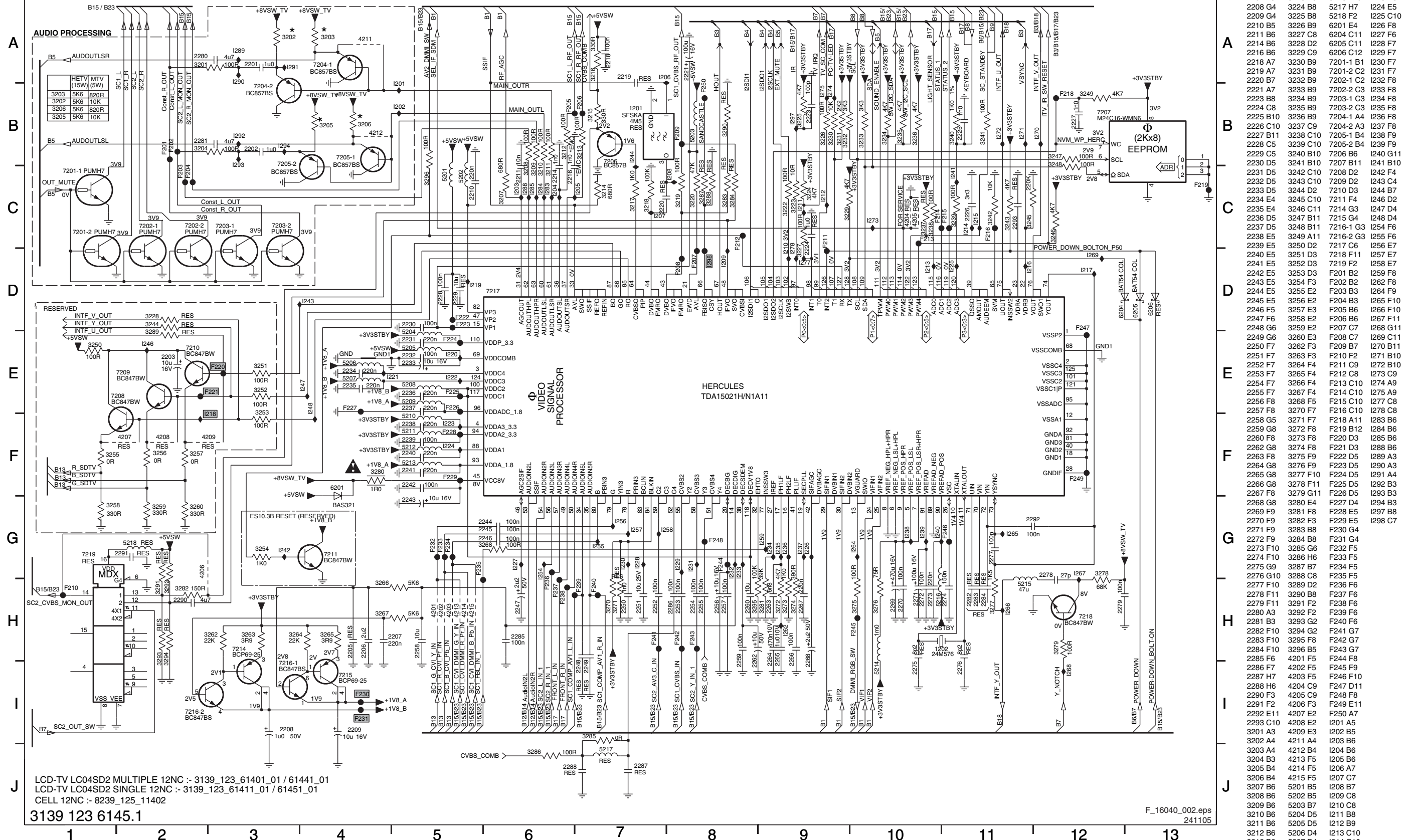
B1 TUNER & IF



SSB: Hercules

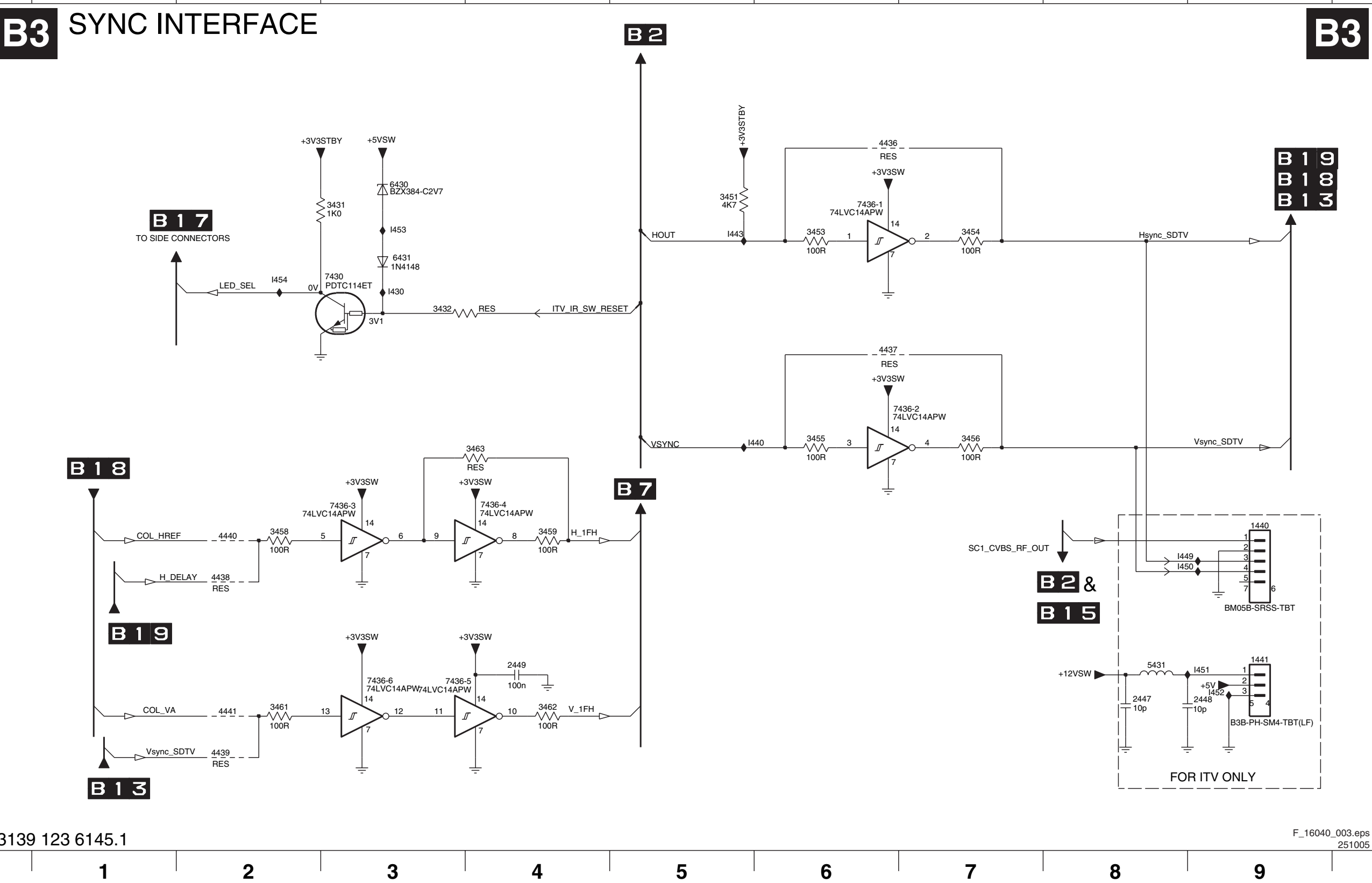
B2 HERCULES

B2



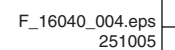
SSB: Sync Interface

B3 SYNC INTERFACE

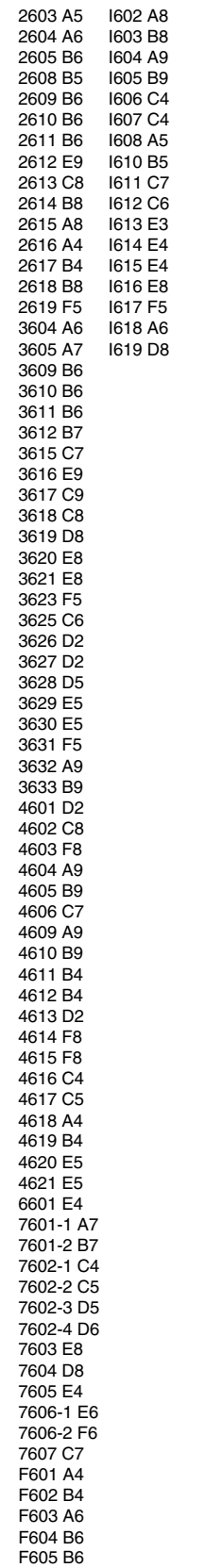


- 1440 D9
- 1441 E9
- 2447 E8
- 2448 E9
- 2449 E4
- 3431 A3
- 3432 B3
- 3451 A5
- 3453 B6
- 3454 B7
- 3455 C6
- 3456 C7
- 3458 D2
- 3459 D4
- 3461 E2
- 3462 E4
- 3463 C4
- 4436 A6
- 4437 B6
- 4438 D2
- 4439 E2
- 4440 D2
- 4441 E2
- 5431 E8
- 6430 A3
- 6431 B3
- 7430 B3
- 7436-1 A6
- 7436-2 C7
- 7436-3 D3
- 7436-4 D4
- 7436-5 E4
- 7436-6 E3
- I430 B3
- I440 C6
- I443 B5
- I449 D8
- I450 D8
- I451 E9
- I452 E9
- I453 B3
- I454 B2

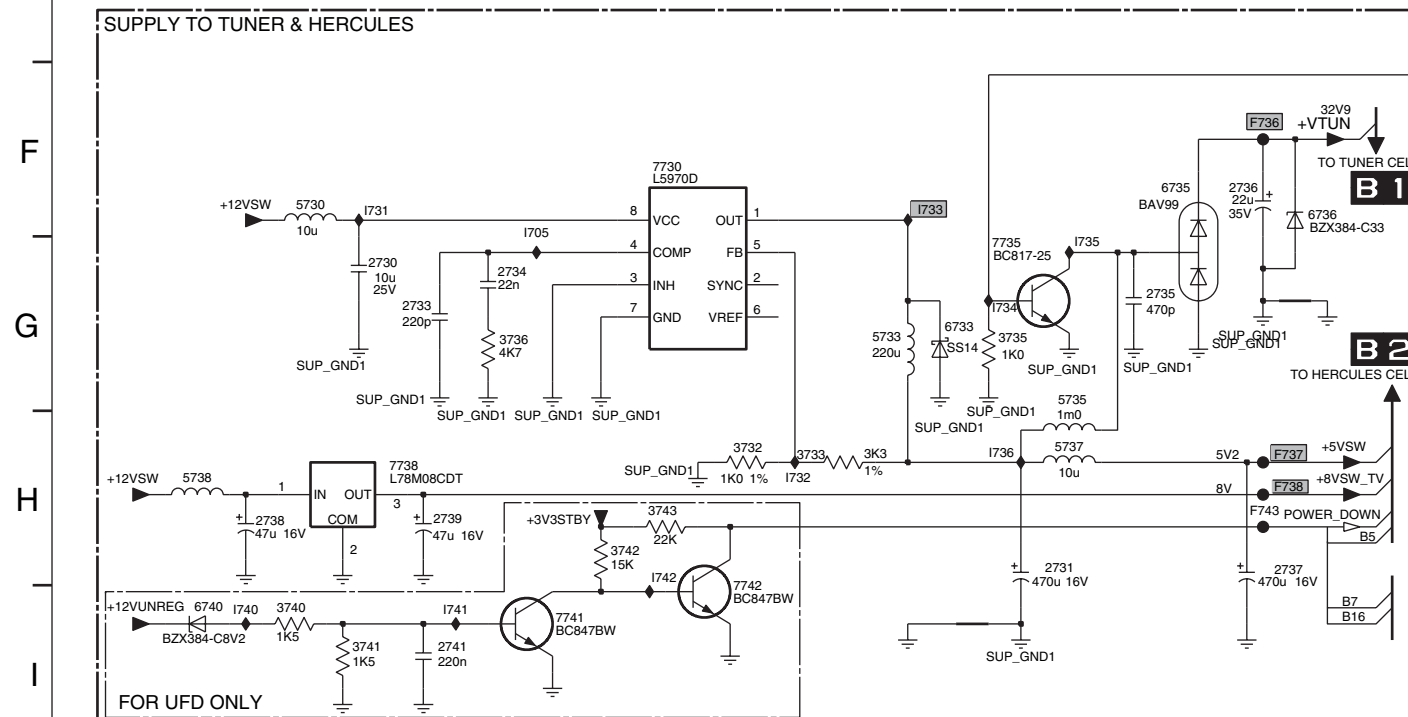
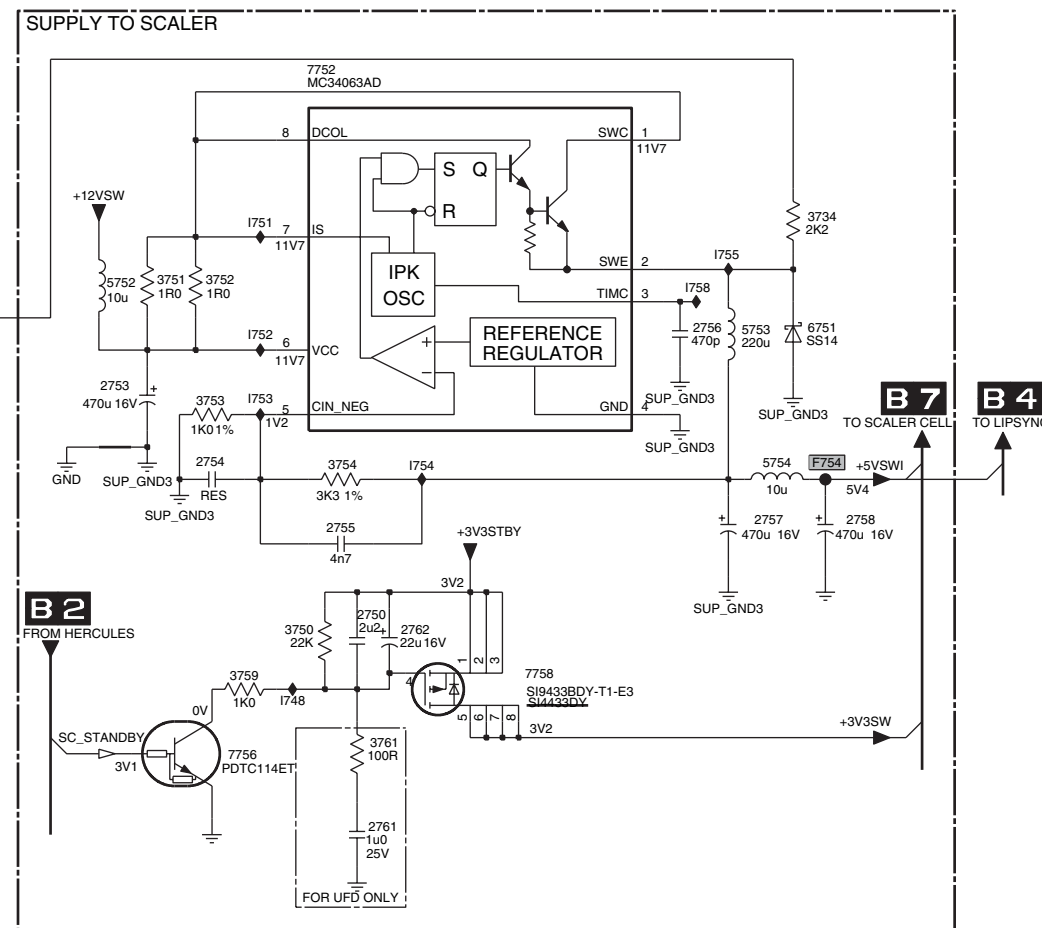
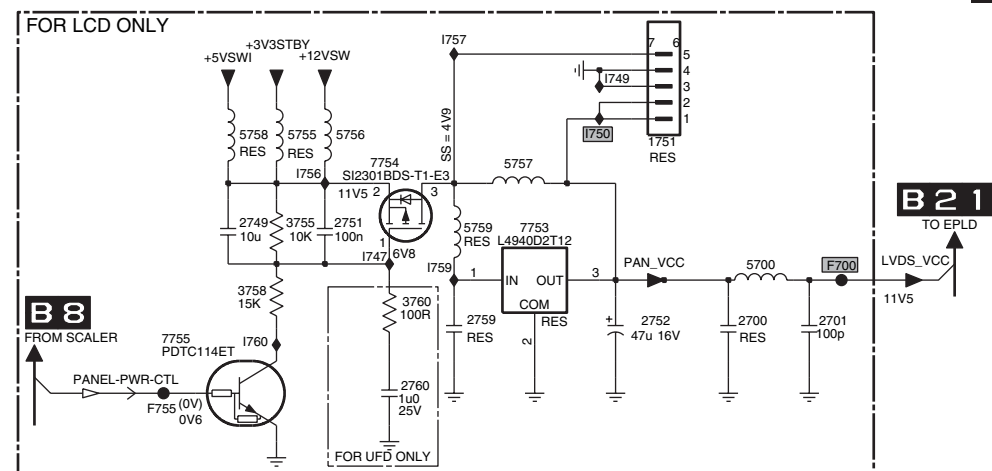
B4 AUDIO DELAY LINE (LIPSYNC)



B5 AUDIO PROCESSING



B6 DC-DC CONVERTER



F_16040_006.eps
251005

1751 A10	7708 B4
2700 B11	7710 C3
2701 B11	7730 E4
2704 A3	7735 E5
2706 B4	7738 F3
2708 C3	7741 G3
2709 B4	7742 G4
2710 C2	7752 C9
2711 C3	7753 B10
2713 D5	7754 A9
2714 D4	7755 B8
2715 C5	7756 F8
2716 D6	7758 F10
2730 E3	F700 B11
2731 G6	F701 A4
2733 E3	F710 B6
2734 E3	F736 E6
2735 E6	F737 F7
2736 E6	F738 F7
2737 G7	F743 F6
2738 F2	F754 E11
2739 F3	F755 B8
2741 G3	I705 E3
2749 B9	I706 B4
2750 F9	I708 B4
2751 B9	I709 B4
2752 B10	I710 C2
2753 E8	I711 C3
2754 E8	I712 C4
2755 E9	I713 C5
2756 D11	I714 C4
2757 E11	I715 C4
2758 E11	I716 C5
2759 B10	I731 E3
2760 B9	I732 F4
2761 G9	I733 E5
2762 F9	I734 E5
2708 B2	I735 E6
3709 C3	I736 F5
3712 C5	I740 G3
3713 D5	I741 G2
3716 D5	I742 G4
3732 F4	I747 B9
3733 F4	I748 F9
3734 D11	I749 A10
3735 F5	I750 A10
3736 F3	I751 D9
3740 G2	I752 E9
3741 G2	I753 E9
3742 G4	I754 E9
3743 F4	I755 D11
3750 F9	I756 A9
3751 D8	I757 A9
3752 D8	I758 D11
3753 E8	I759 B9
3754 E9	I760 B9
3755 B9	
3758 B8	
3759 F9	
3760 B9	
3761 F9	
5700 B11	
5704 B4	
5709 C2	
5712 C4	
5713 C6	
5730 E2	
5733 F5	
5735 F6	
5737 F6	
5738 F2	
5752 D8	
5753 E11	
5754 E11	
5755 A9	
5756 A9	
5757 A10	
5758 A9	
5759 B10	
6708 C2	
6709 B3	
6712 D4	
6733 F5	
6735 E6	
6736 E7	
6740 G2	
6751 E11	

SSB: Diversity Tables B1-B6

B1 TUNER & IF

Item	AP - non China	Europe	NAFTA/LT	AP - DVB	Europe - DVB	China	Description
1102						V	TUN V+U PLL IEC BGDKM B
1102		V					TUN V+U PLL IEC BGHIL B
1102			V				TUNER UV1338/A F S H-4
1102	V						TUNER UV1316E/A I H-4
1102				V	V		TUNER UV1318SD/A CP H N-4
1104		V			V		FIL SAW SM 38MHZ9 OFWK3953L R
1104						V	FIL SAW SM 38MHZ OFWM3956L R
1104			V				FIL SAW SM 45MHZ75 OFWM1967L R
1104	V			V			FIL SAW SM 38MHZ9 OFWK7265L R
1105						V	FIL SAW SM 38MHZ OFWK3955L R
1106		V			V		FIL SAW SM 38MHZ9 OFWK9656L R
1106						V	FIL SAW SM 38MHZ OFWK9352L R
1106	V			V			FIL SAW SM 38MHZ9 OFWK9361L R
3101	V		V			V	RST SM 0603 100R PM5 COL
3102	V		V			V	RST SM 0603 100R PM5 COL
3104		V			V		RST SM 0603 10K PM5COL
3104	V		V	V		V	RST SM 0603 JUMP. 0R05 COL
3107	V	V		V	V	V	RST SM 0603 6K8 PM5 COL
3108	V	V		V	V	V	RST SM 0603 2K2 PM5 COL
3109	V	V		V	V	V	RST SM 0603 2K2 PM5 COL
3110						V	RST SM 0603 2K2 PM5 COL
3111	V	V		V	V	V	RST SM 0603 22K PM5 COL
3112	V	V		V	V	V	RST SM 0603 18K PM5 COL
3113						V	RST SM 0603 22K PM5 COL
3114						V	RST SM 0603 47K PM5 COL
4102	V	V	V	V	V		RST SM 0603 JUMP. 0R05 COL
4103						V	RST SM 0603 JUMP. 0R05 COL
4104	V				V		RST SM 0603 JUMP. 0R05 COL
4106		V	V		V	V	RST SM 0603 JUMP. 0R05 COL
4107						V	RST SM 0603 JUMP. 0R05 COL
4108						V	RST SM 0603 JUMP. 0R05 COL
4110	V	V		V	V	V	RST SM 0603 JUMP. 0R05 COL
4111		V			V		RST SM 0603 JUMP. 0R05 COL
4113	V			V		V	RST SM 0603 JUMP. 0R05 COL
5101	V	V		V	V	V	FXDIND SM 0805 0U39 PM10 COL R
5101			V				FXDIND SM 0805 0U68 PM10 COL R
5102	V	V	V	V			FXDIND SM 0805 12U PM10 COL R
5102					V		FXDIND SM 1008 6U8 PM5 COL R
5107				V	V		FXDIND 0603 100MHZ 600R COL R
5107		V					RST SM 0603 100R PM5 COL
5108				V	V		FXDIND 0603 100MHZ 600R COL R
5108		V					RST SM 0603 100R PM5 COL
6103		V			V		DIO SIG SM BAS316 (COL) R
6105						V	DIO SIG SM 1SS356 (RHM0) R
7101	V	V		V	V	V	TRA SIG SM BC847BW (COL) R
7102						V	TRA SIG SM BC847BW (COL) R

B2 HERCULES

Item	LC4.3A AB (DVB-T)	LC4.3E AB/LC4.8E AB/LC4.9E AB (DVB-T)	LC4.3U/L	LC4.3E/LC4.8E/LC4.9E	LC4.3E W/O 3D COMB FILTER	LC4.3A - CHINA	LC4.3A - AP (non-China)	Description
2203	V	V		V	V	V	V	ELCAP SM 16V 10U PM20 COL R
2229			V					CER2 0805 X5R 6V3 10U PM10 R
2244	V	V		V	V			CER2 0402 Y5V 16V 100N COL
2245	V	V		V	V			CER2 0402 Y5V 16V 100N COL
2246	V	V		V	V			CER2 0402 Y5V 16V 100N COL
2255	V	V	V	V		V	V	CER2 0402 Y5V 16V 100N COL
2286	V	V	V	V		V	V	CER2 0402 Y5V 16V 100N COL
2289	V							CER2 0805 Y5V 10V 4U7 P8020 R
2289				V				RST SM 0603 150R PM5 COL
2290	V	V		V	V			CER2 0805 Y5V 10V 4U7 P8020 R
2291	V	V		V				CER2 0402 Y5V 16V 100N COL
2292		V						CER2 0402 Y5V 16V 100N COL
3250		V		V	V	V	V	RST SM 0402 100R PM5 COL
3251		V		V	V	V	V	RST SM 0402 100R PM5 COL
3252		V		V	V	V	V	RST SM 0402 100R PM5 COL
3253		V		V	V	V	V	RST SM 0402 100R PM5 COL
3255		V		V	V	V	V	RST SM 0402 JUMP. 0R05 COL
3256		V		V	V	V	V	RST SM 0402 JUMP. 0R05 COL
3257		V		V	V	V	V	RST SM 0402 JUMP. 0R05 COL
3258		V		V	V	V	V	RST SM 0402 1K PM5 COL
3259		V		V	V	V	V	RST SM 0402 1K PM5 COL
3260		V		V	V	V	V	RST SM 0402 1K PM5 COL
3270								RST SM 0402 10K PM5 COL
3282		V						RST SM 0603 150R PM5 COL
3285	V	V	V	V		V	V	RST SM 0402 JUMP. 0R05 COL
3286	V	V	V	V		V	V	RST SM 0402 100R PM5 COL
3291	V							RST SM 0402 47K PM5 COL
3292		V		V				RST SM 0402 12K PM5 COL
3292	V							RST SM 0402 47K PM5 COL
3293	V							RST SM 0402 47K PM5 COL
3294	V	V		V				RST SM 0402 47K PM5 COL
3295	V	V		V	V	V	V	RST SM 0402 100K PM5 COL
3296	V	V						RST SM 0402 100R PM5 COL
4206			V		V	V	V	RST SM 0805 JUMP. 0R05 COL R
4213	V	V						RST SM 0402 JUMP. 0R05 COL
4214	V	V						RST SM 0402 JUMP. 0R05 COL
4215	V	V						RST SM 0402 JUMP. 0R05 COL
5218	V	V		V				IND FXD 1206 EMI 100MHZ 120R R
6206	V	V						DIO SIG SM BAT54 SOD323 COL R
7208		V		V	V	V	V	TRA SIG SM BC847BW (COL) R
7209		V		V	V	V	V	TRA SIG SM BC847BW (COL) R
7210		V		V	V	V	V	TRA SIG SM BC847BW (COL) R
7217			V			V		IC SM TDA15011H/N1BD0 (PHSE) Y
7217	V	V		V	V		V	IC SM TDA15021H/N1B91 (PHSE) Y
7219	V	V		V				IC SM 74HC4053D (PHSE) R

B3 SYNC INTERFACE

Item	26/32PFxxxx - AP/NAFTA/LT	EU & AP DVB sets	LC4.3E/LC4.9x/LC4.8x/LC4.3A-China	26PF4310/10	Description
2449	V	V	V		CER2 0402 Y5V 16V 100N COL
3432		V			RST SM 0402 2K7 PM5 COL
3458	V	V	V		RST SM 0402 100R PM5 COL
3459	V	V	V		RST SM 0402 100R PM5 COL
3461	V	V	V		RST SM 0402 100R PM5 COL
3462	V	V	V		RST SM 0402 100R PM5 COL
4436				V	RST SM 0402 JUMP. 0R05 COL
4437				V	RST SM 0402 JUMP. 0R05 COL
4440	V	V	V		RST SM 0402 JUMP. 0R05 COL
4441	V	V	V		RST SM 0402 JUMP. 0R05 COL
6430	V		V	V	DIO REG SM PD22.4B (PHSE) R
6431	V		V	V	DIO SIG SM 1N4148WS (VISH) R
7436	V	V	V		IC SM 74LVC14APW (PHSE) R

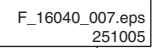
B5 AUDIO WITHOUT AMPLIFIER

Item	26/32PF	37/42/50PF	Description
2612		V	CER2 0603 Y5V 10V 1U COL
2613	V		CER2 0603 Y5V 10V 1U COL
2616	V		CER2 0603 X5R 6V3 2U2 PM10 R
2617	V		CER2 0603 X5R 6V3 2U2 PM10 R
3615	V		RST SM 0402 10K PM5 COL
3616		V	RST SM 0402 1K PM5 COL
3617		V	RST SM 0402 1K PM5 COL
3618	V		RST SM 0402 22K PM5 COL
3619		V	RST SM 0402 10K PM5 COL
3620		V	RST SM 0402 10K PM5 COL
3623	V		RST SM 0402 47K PM5 COL
3625	V		RST SM 0402 3K3 PM5 COL
3627	V		RST SM 0402 22K PM5 COL
3628		V	RST SM 0402 10K PM5 COL
3629		V	RST SM 0402 22K PM5 COL
3630	V		RST SM 0402 330R PM5 COL
3630		V	RST SM 0402 470R PM5 COL
3631	V		RST SM 0402 330R PM5 COL
3631	V		RST SM 0402 470R PM5 COL
3632		V	RST SM 0402 RC31 39R PM5 R
3633		V	RST SM 0402 RC31 39R PM5 R
4601		V	RST SM 0603 JUMP. 0R05 COL
4602	V		RST SM 0603 JUMP. 0R05 COL
4603	V		RST SM 0603 JUMP. 0R05 COL
4606		V	RST SM 0603 JUMP. 0R05 COL
4609	V		RST SM 0603 JUMP. 0R05 COL
4610		V	RST SM 0603 JUMP. 0R05 COL
4611	V		RST SM 0603 JUMP. 0R05 COL
4612	V		RST SM 0603 JUMP. 0R05 COL
4613	V		RST SM 0603 JUMP. 0R05 COL
4614		V	RST SM 0603 JUMP. 0R05 COL
4615		V	RST SM 0603 JUMP. 0R05 COL
4616	V		RST SM 0603 JUMP. 0R05 COL
4617		V	RST SM 0603 JUMP. 0R05 COL
4618		V	RST SM 0603 JUMP. 0R05 COL
4619		V	RST SM 0603 JUMP. 0R05 COL
4620	V		RST SM 0603 JUMP. 0R05 COL
4621		V	RST SM 0603 JUMP. 0R05 COL
7603		V	TRA SIG SM BC847BW (COL) R
7604		V	TRA SIG SM BC847BW (COL) R
7607	V		TRA SIG SM BC847BW (COL) R

B6 DC DC CONVERTER

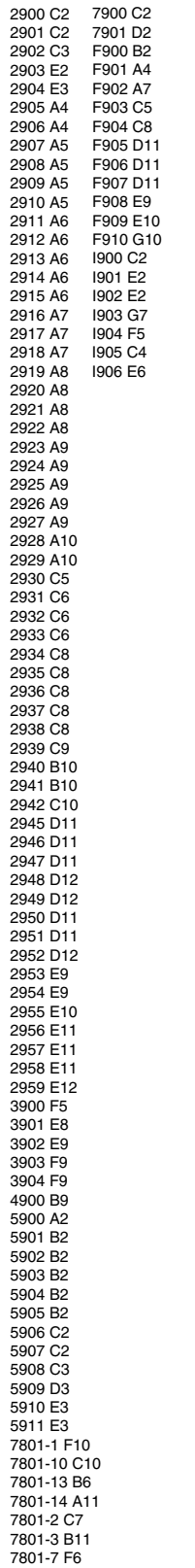
Item	26/32PF LCD	37/42PF LCD	42/50PF PDP	DVB PDP 42PF	DVB LCD 37PF	Description
2701	V	V			V	CER1 0402 NP0 50V 100P COL
2706		V	V	V	V	ELCAP SM 16V 10U PM20 COL R
2709		V	V	V	V	ELCAP SM 16V 47U PM20 COL R
2710		V	V	V	V	CER2 1210 Y5V 25V 10U P8020 R
2711		V	V	V	V	CER2 1210 Y5V 25V 10U P8020 R
2713		V	V	V	V	ELCAP SM SEV 16V 470U PM20 R
2714		V	V	V	V	CER2 0402 X7R 50V 220P COL
2715		V	V	V	V	CER2 0402 X7R 16V 22N PM10 R
2741		V	V	V	V	CER2 0603 X7R 16V 220N COL
2751	V	V			V	CER2 0402 Y5V 16V 100N COL
2752	V	V			V	ELCAP SM 16V 47U PM20 COL R
2760	V	V			V	CER2 1206 X7R 25V 1U PM10 R
2761		V	V	V	V	CER2 1206 X7R 25V 1U PM10 R
3708		V	V	V	V	RST SM 0402 10K PM5 COL
3709		V	V	V	V	RST SM 0402 6K8 PM5 COL
3712		V	V	V	V	RST SM 0603 RC22H 5K6 PM1 R
3713		V	V	V	V	RST SM 0603 RC22H 3K3 PM1 R
3716		V	V	V	V	RST SM 0402 4K7 PM5 COL
3740		V	V	V	V	RST SM 0402 1K5 PM5 COL
3741		V	V	V	V	RST SM 0402 1K5 PM5 COL
3742		V	V	V	V	RST SM 0402 15K PM5 COL
3743		V	V	V	V	RST SM 0402 22K PM5 COL
3755	V				V	RST SM 0402 10K PM5 COL
3758	V	V			V	RST SM 0402 15K PM5 COL
3760	V	V			V	RST SM 0402 100R PM5 COL
3761		V	V	V	V	RST SM 0402 100R PM5 COL
5700	V	V			V	IND FXD 1206 EMI 100MHZ 120R R
5704		V	V	V	V	IND FXD SM 1206 10U PM20 R
5709		V	V	V	V	IND FXD SM 7032 10U PM20 R
5712		V	V	V	V	IND FXD SM 12565 33U PM20 R
5713		V	V	V	V	INDFXD SM 10145 10U PM20 R
5756	V	V			V	IND FXD 1206 EMI 100MHZ 120R R
5757	V	V			V	IND FXD 1206 EMI 100MHZ 120R R
6708		V	V	V	V	DIO REC SS24 COL R
6709		V	V	V	V	DIO REC SS14 COL R
6712		V	V	V	V	DIO REC SS36 COL R
6740		V	V	V	V	DIO REG SM PD28.2B (PHSE) R
7708		V	V	V	V	IC SM LF33CPT (ST00) R
7710		V	V	V	V	IC SM E-L5973D (ST00) R
7741		V	V	V	V	TRA SIG SM BC847BW (COL) R
7742		V	V	V	V	TRA SIG SM BC847BW (COL) R
7754	V	V			V	FET POW SM SI2301BDS-E3(VISH)R
7755	V	V			V	TRA SIG SM PDT114ET (COL) R

B7 SCALER



1801 B12	7801-12 A4
1801 B14	7801-14 C11
2800 A1	7801-5 E11
2801 A1	7801-6 F4
2802 A1	7801-9 G11
2803 A1	F800 A1
2804 A2	F801 B3
2805 A2	F802 A9
2806 A2	F803 G14
2807 A2	F804 G14
2808 A2	I800 G2
2809 A3	I801 B12
2810 A3	I802 F10
2811 A3	I803 F10
2812 A3	I804 E12
2813 B2	I805 E12
2814 B3	I806 F12
2815 A9	I807 F12
2816 A9	I808 F12
2817 A10	I809 G12
2818 A10	I810 G12
2819 A10	I811 G14
2820 A12	I812 F3
2821 A12	I813 A1
2822 A12	I815 G3
2823 A10	I816 G2
2824 A12	I802 F10
3800 B3	I818 F3
3801-1 C1	I819 H10
3801-2 C1	I820 H10
3801-3 C1	I821 H10
3802-1 C1	I822 G12
3802-2 C1	
3802-3 C1	
3802-4 C1	
3803-1 D1	
3803-2 D1	
3803-3 C1	
3803-4 C1	
3804-1 D1	
3804-2 D1	
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3813-1 C6	
3813-2 D6	
3813-3 D6	
3813-4 D6	
3814 D6	
3815 D6	
3816 D6	
3817 D6	
3818 E6	
3819 F2	
3820 F1	
3822 G5	
3823 F5	
3824 B12	
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3825-2 F9	
3825-3 F9	
3825-4 F9	
3826-1 F9	
3826-2 F9	
3826-3 F9	
3826-4 F9	
3827 F13	
3828 F13	
3829 F13	
3830 H10	
3831 I9	
3832 I9	
3833 I9	
3834 G13	
3835 G13	
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3838 G14	
3839 G3	
3840 I3	
3841 H14	
4801 H5	
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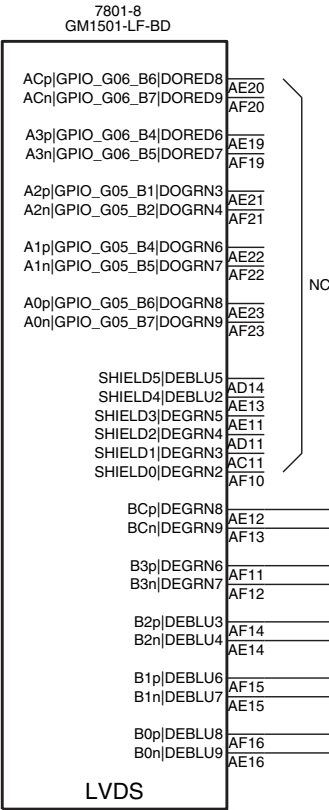
B8 SCALER



SSB: Scaler Interface

B9 SCALER INTERFACE

B9



B 2 0
TO EPLD

B 7
TO SCALER

B 2 0
FROM EPLD

B 1 6
TO TOP CONNECTORS

- 2A00 D3
- 2A01 E2
- 2A02 E2
- 2A03 B7
- 2A12 E6
- 2A13 D8
- 3A00 E2
- 3A01 E2
- 3A02 B5
- 3A03 B6
- 3A04 B6
- 3A05 B6
- 3A06 B7
- 3A07 D2
- 3A08 D2
- 3A10 E6
- 3A11 D7
- 3A13 D8
- 3A14 D9
- 4A00 E3
- 4A01 E3
- 4A02 A6
- 4A03 C6
- 4A04 E4
- 4A05 E6
- 4A06 E8
- 5A00 D3
- 6A01 E9
- 7801-8 A2
- 7A00 D4
- 7A01 B6
- 7A02 E6
- 7A03 E8
- IA00 B7
- IA03 E6
- IA05 A8
- IA06 B7
- IA07 A6
- IA08 D3
- IA09 E3

FOR PDP ONLY

FOR UFD ONLY

B 2 1
TO EPLD

B 2
FROM HERCULES

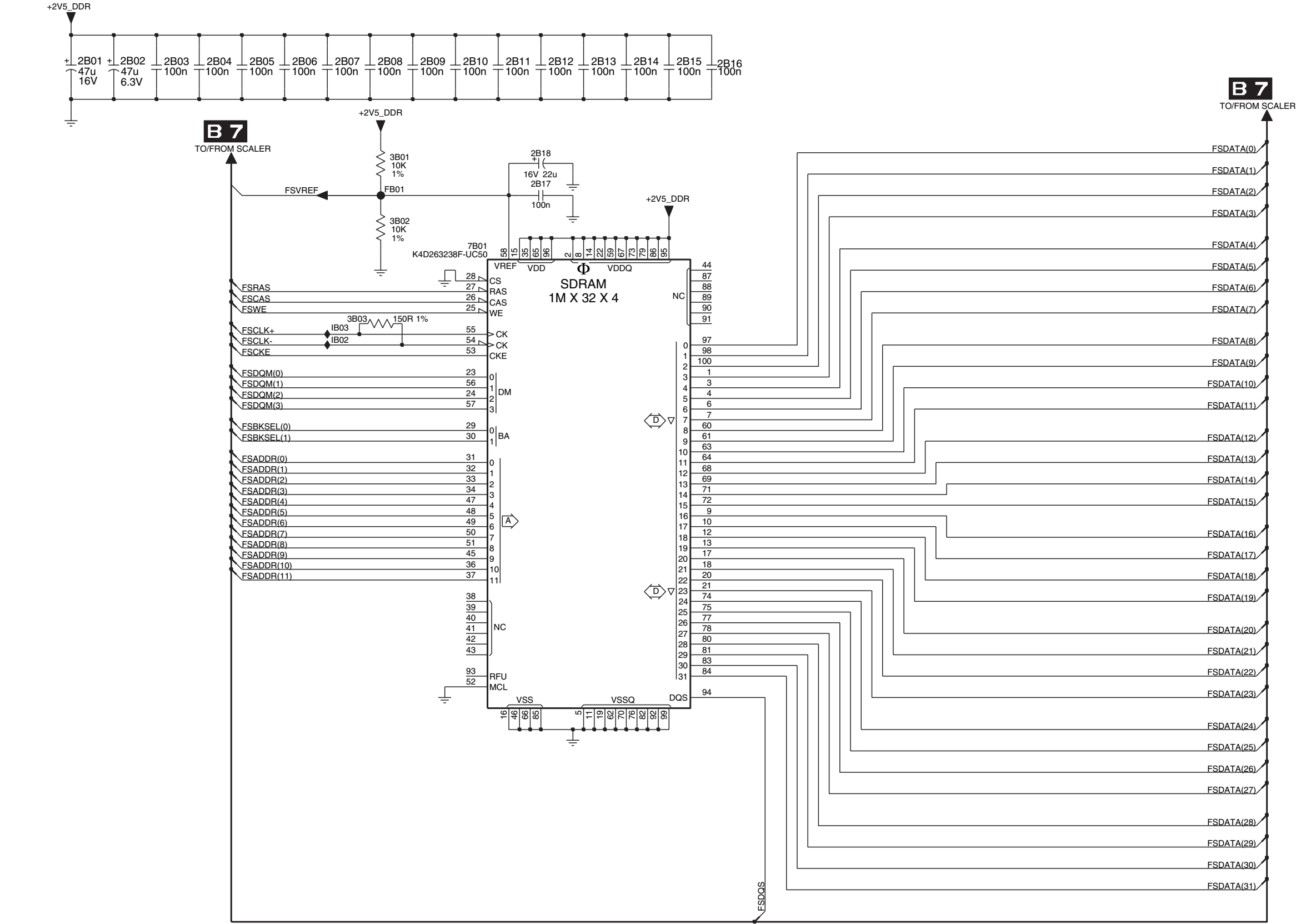
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3139 123 6145.1

SSB: SDRAM

B10 SDRAM

B10



3139 123 6145.1

F_16040_010.eps
251005

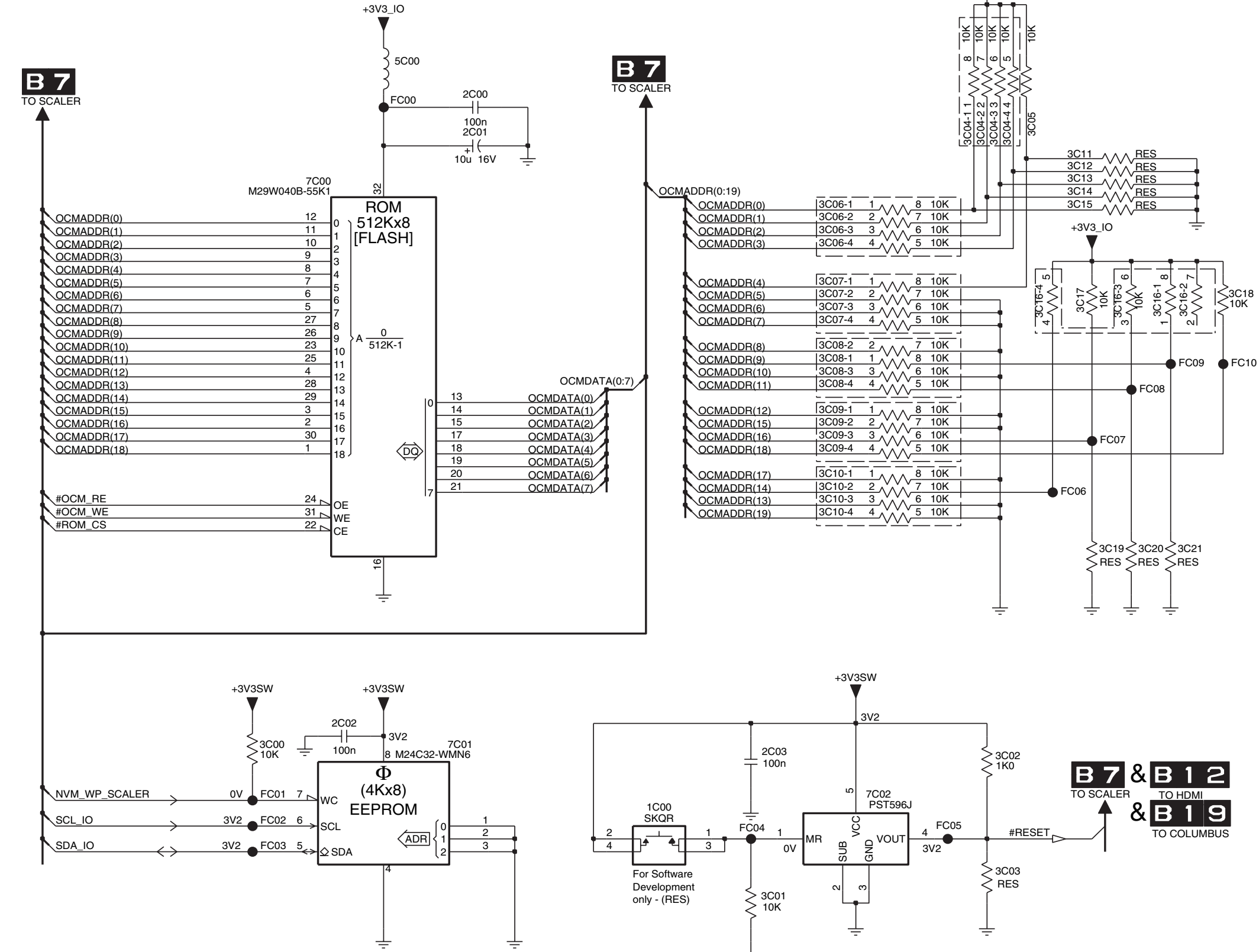
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- 2B02 A1
- 2B03 A1
- 2B04 A2
- 2B05 A2
- 2B06 A2
- 2B07 A2
- 2B08 A3
- 2B09 A3
- 2B10 A3
- 2B11 A4
- 2B12 A4
- 2B13 A4
- 2B14 A4
- 2B15 A5
- 2B16 A5
- 2B17 B4
- 2B18 A4
- 3B01 A3
- 3B02 B3
- 3B03 C3
- 7B01 B3
- IB02 C2
- IB03 C2

SSB: Flash / Control

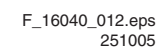
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B11

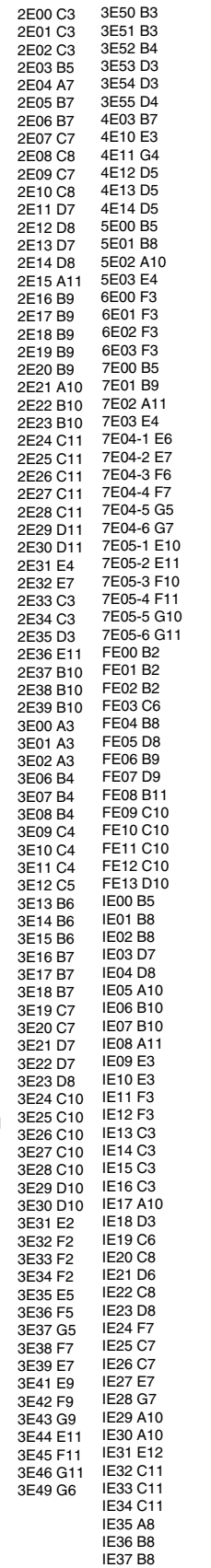
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2C02 E2
2C03 E5
3C00 E2
3C01 E5
3C02 E6
3C03 E6
3C04-1 A6
3C04-2 A6
3C04-3 A6
3C04-4 A6
3C05 A6
3C06-1 B5
3C06-2 B5
3C06-3 B5
3C06-4 B5
3C07-1 B5
3C07-2 B5
3C07-3 B5
3C07-4 B5
3C08-1 B5
3C08-2 B5
3C08-3 C5
3C08-4 C5
3C09-1 C5
3C09-2 C5
3C09-3 C5
3C09-4 C5
3C10-1 C5
3C10-2 C5
3C10-3 C5
3C10-4 C5
3C11 A6
3C12 A6
3C13 A6
3C14 B6
3C15 B6
3C16-1 B7
3C16-2 B7
3C16-3 B6
3C16-4 B6
3C17 B6
3C18 B7
3C19 C6
3C20 C7
3C21 C7
5C00 A3
7C00 A2
7C01 E3
7C02 E5
FC00 A3
FC01 E2
FC02 E2
FC03 E2
FC04 E4
FC05 E6
FC06 C6
FC07 C6
FC08 C7
FC09 B7
FC10 B7



2D00 A4	2D06 F4	2D12 A5	2D18 B6	2D24 B7	2D30 B8	2D36 G11	2D44 F14	3D04 C2	3D10 C5	3D15-4 C11	3D17-2 D11	3D18-4 D11	3D21-4 F9	3D27 H13	3D35 H12	5D03 A7	7D04 E11	F004 D2	F010 A6	F016 E13	ID04 F5	ID10 G12	ID16 E13	ID22 F4
2D01 C2	2D07 A5	2D13 B6	2D19 H7	2D25 B7	2D31 H11	2D37 G11	2D45 G14	3D05 C4	3D11 F4	3D16-1 C11	3D17-3 D11	3D18-5 D11	3D22-1 F9	3D28 F14	3D30 F13	5D05 A7	7D05 F13	F005 G2	F011 A3	F017 H7	ID05 G2	ID11 G4	ID17 E12	
2D02 C3	2D08 B5	2D14 B5	2D20 A7	2D26 B7	2D32 E11	2D38 G12	3D00 A2	3D06 C4	3D12 F4	3D16-2 C11	3D17-4 D11	3D20 E12	3D23 G9	3D31 F14	4D01 F13	7D00 A2	F000 B3	F006 G2	F012 F9	ID00 C3	ID06 F5	ID12 H12	ID18 F14	
2D03 F4	2D09 B5	2D15 B5	2D21 B6	2D27 A8	2D33 E11	2D39 G12	3D01 A3	3D07 D4	3D15-1 B11	3D16-3 C11	3D18-1 D11	3D21-1 G9	3D24 G11	3D32 G14	5D00 A5	D01 D3	F001 C3	F008 G2	F013 E11	ID07 A5	ID07 G5	ID13 H12	ID19 F14	
2D04 F4	2D10 B5	2D16 B5	2D22 B6	2D28 B8	2D34 E12	2D40 G12	3D02 A3	3D08 D4	3D15-2 B11	3D16-4 C11	3D18-2 D11	3D21-2 G9	3D25 H11	3D33 G14	5D01 A6	7D02 D4	F002 C2	F008 A6	F014 E12	ID02 D4	ID08 G10	ID14 H12	ID20 F14	
2D05 F4	2D11 B5	2D17 A6	2D23 A7	2D29 B8	2D35 E12	2D41 H13	3D03 C2	3D09 C5	3D15-3 C11	3D17-1 C11	3D18-3 D11	3D21-3 F9	3D26 G12	3D34 H11	5D02 A6	7D03 C5	F003 C2	F008 A6	F015 F10	ID03 D4	ID09 G11	ID15 F13	ID21 G14	



B13 MUX-SYNC INTERFACE

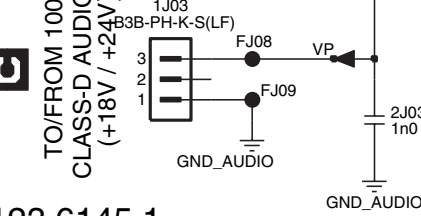
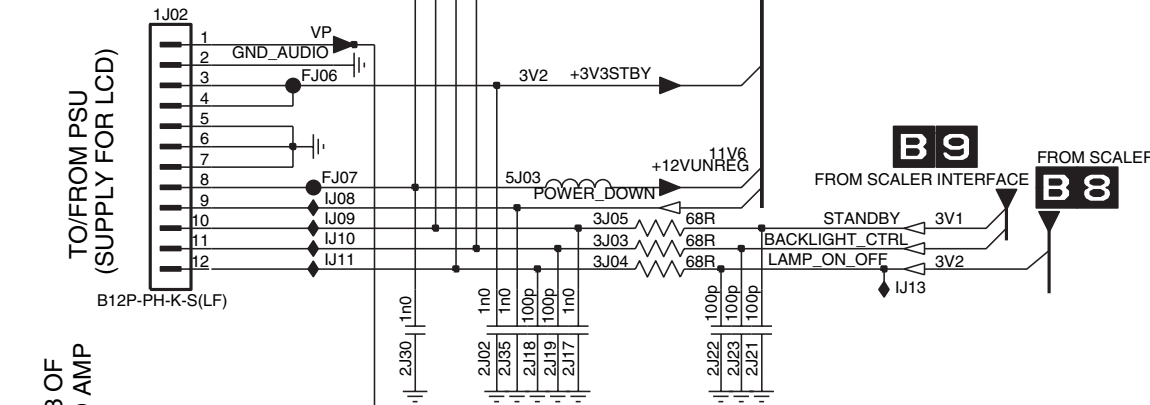
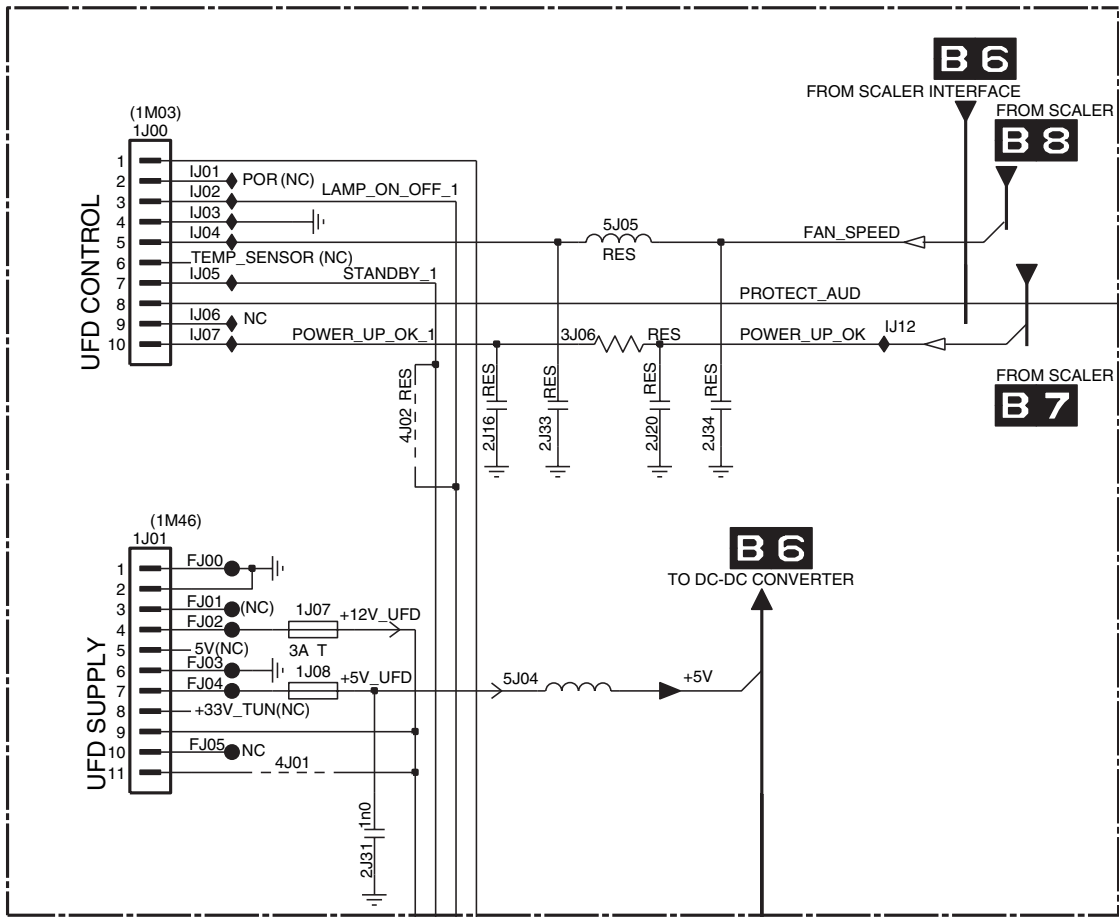


SSB: Top Connectors

B16 TOP CONNECTORS

B16

FOR UFD ONLY

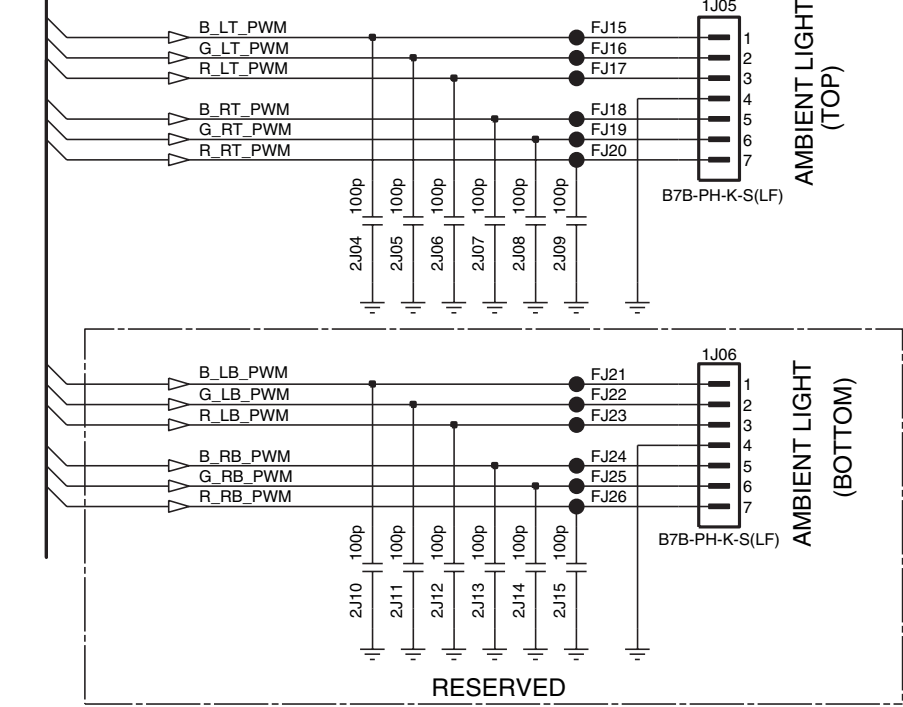


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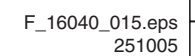
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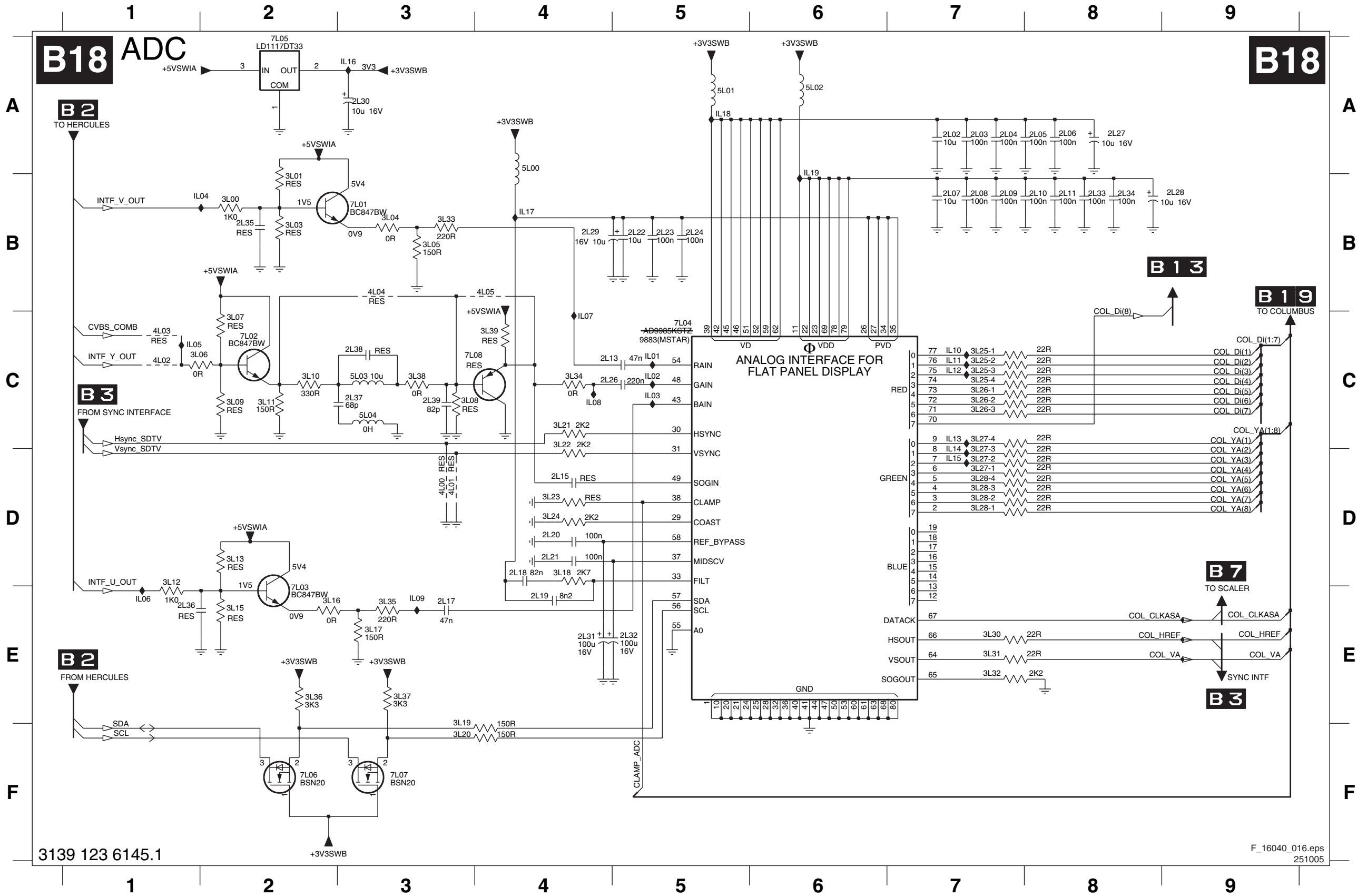
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| 1J01 B1 | FJ20 C7 |
| 1J02 D1 | FJ21 D7 |
| 1J03 E1 | FJ22 D7 |
| 1J04 A8 | FJ23 D7 |
| 1J05 C8 | FJ24 D7 |
| 1J06 D8 | FJ25 D7 |
| 1J07 B2 | FJ26 D7 |
| 1J08 C2 | IJ01 A1 |
| 2J02 E2 | IJ02 A1 |
| 2J03 E2 | IJ03 A1 |
| 2J04 C6 | IJ04 A1 |
| 2J05 C7 | IJ05 A1 |
| 2J06 C7 | IJ06 A1 |
| 2J07 C7 | IJ07 A1 |
| 2J08 C7 | IJ08 D2 |
| 2J09 C7 | IJ09 D2 |
| 2J10 E6 | IJ10 D2 |
| 2J11 E7 | IJ11 E2 |
| 2J12 E7 | IJ12 A4 |
| 2J13 E7 | IJ13 E4 |
| 2J14 E7 | |
| 2J15 E7 | |
| 2J16 B2 | |
| 2J17 E3 | |
| 2J18 E2 | |
| 2J19 E3 | |
| 2J20 B3 | |
| 2J21 E3 | |
| 2J22 E3 | |
| 2J23 E3 | |
| 2J26 B6 | |
| 2J27 B7 | |
| 2J28 B7 | |
| 2J29 B7 | |
| 2J30 E2 | |
| 2J31 C2 | |
| 2J33 B2 | |
| 2J34 B3 | |
| 2J35 E2 | |
| 2J36 B7 | |
| 3J03 E3 | |
| 3J04 E3 | |
| 3J05 D3 | |
| 3J06 B3 | |
| 4J01 C2 | |
| 4J02 B2 | |
| 5J01 A7 | |
| 5J02 A7 | |
| 5J03 D2 | |
| 5J04 C2 | |
| 5J05 A3 | |
| FJ00 B1 | |
| FJ01 B1 | |
| FJ02 C1 | |
| FJ03 C1 | |
| FJ04 C1 | |
| FJ05 C1 | |
| FJ06 D2 | |
| FJ07 D2 | |
| FJ08 E1 | |
| FJ09 E2 | |
| FJ10 A7 | |
| FJ11 A8 | |
| FJ12 A7 | |
| FJ13 B7 | |
| FJ14 B7 | |
| FJ15 C7 | |
| FJ16 C7 | |
| FJ17 C7 | |
| FJ18 C7 | |

B17 SIDE CONNECTORS



1K00 A8
1K01 D1
1K02 E8
1K03 A1
1K04 D1
2K00 B7
2K01 B6
2K02 C3
2K03 C3
2K04 D3
2K05 D3
2K06 D3
2K07 D3
2K08 D4
2K10 E3
2K11 E3
2K12 E4
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2K14 E3
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2K18 E8
2K19 E3
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2K21 B6
2K22 B6
2K23 B6
2K24 B6
2K25 B7
2K26 B7
2K27 B7
2K28 B7
3K00 C3
3K01 C3
3K02 D3
3K03 D3
3K05 E3
3K06 E3
3K07 E3
3K08 F3
3K09 F3
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3K12 A7
3K13 B7
4K01 A7
4K02 F2
4K03 A7
4K04 A7
4K05 A7
4K06 B1
4K07 B1
5K00 A7
5K01 D3
5K02 A7
FK00 E1
FK01 E1
FK02 E1
FK03 E1
FK04 E1
FK05 E1
FK06 E1
FK07 E1
FK08 E8
FK09 E8
FK10 E1
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IK02 A8
IK03 B8
IK16 A7
IK17 D3
IK18 E3

SSB: ADC

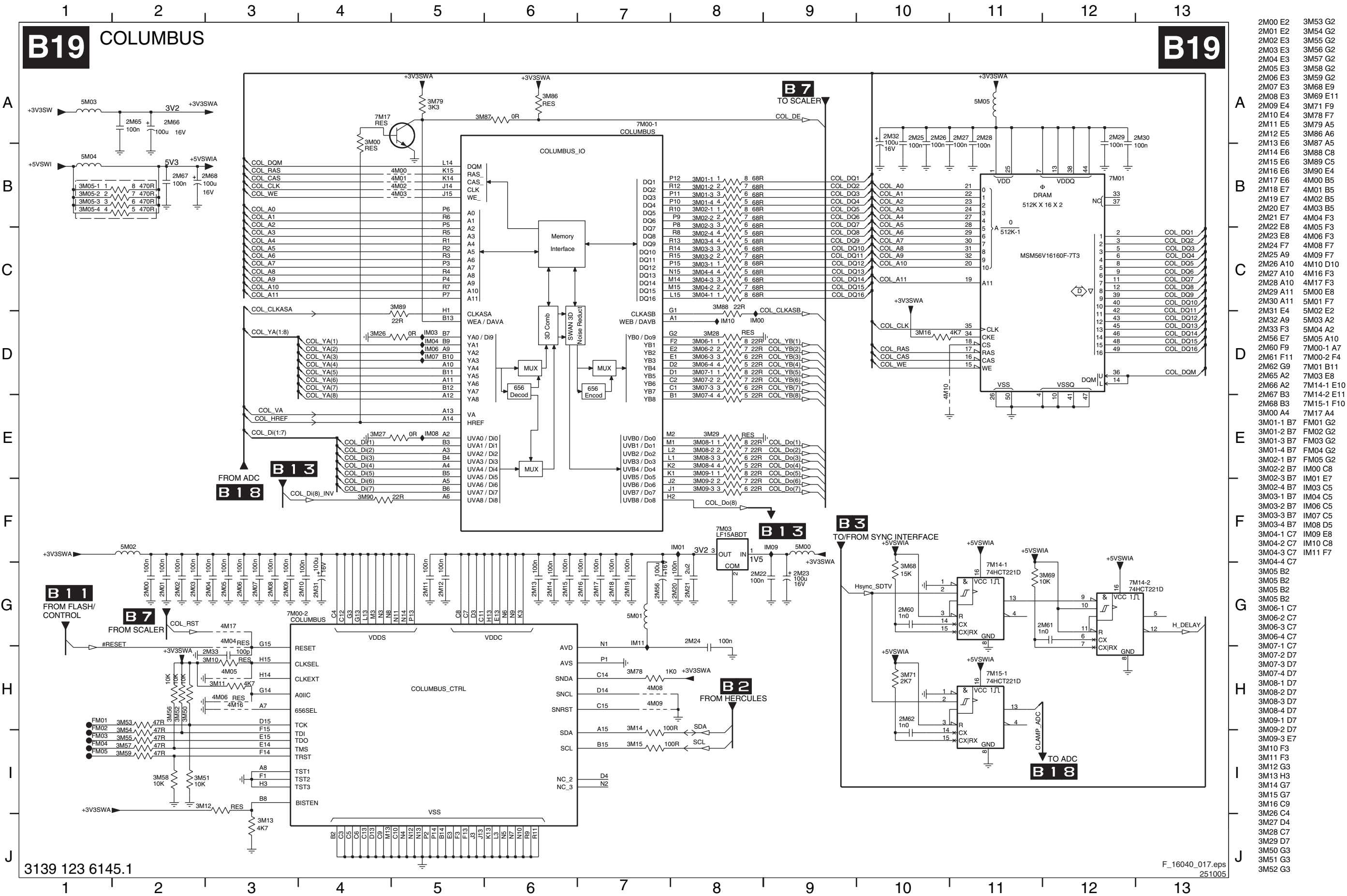


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2L06 A8	3L35 E3
2L07 B7	3L36 E2
2L08 B7	3L37 E3
2L09 B7	3L38 C3
2L10 B8	3L39 C4
2L11 B8	4L00 D3
2L13 C4	4L01 D3
2L15 D4	4L02 C1
2L17 E3	4L03 C1
2L18 D4	4L04 B3
2L19 E4	4L05 B4
2L20 D4	5L00 A4
2L21 D4	5L01 A5
2L22 B5	5L02 A6
2L23 B5	5L03 C3
2L24 B5	5L04 C3
2L26 C4	7L01 B3
2L27 A8	7L02 C2
2L28 B9	7L03 E2
2L29 B4	7L04 C5
2L30 A3	7L05 A2
2L31 E4	7L06 F2
2L32 E5	7L07 F3
2L33 B8	7L08 C3
2L34 B8	IL01 C5
2L35 B2	IL02 C5
2L36 E1	IL03 C5
2L37 C3	IL04 B2
2L38 C3	IL05 C1
2L39 C3	IL06 E1
3L00 B2	IL07 C4
3L01 B2	IL08 C4
3L03 B2	IL09 E3
3L04 B3	IL10 C7
3L05 B3	IL11 C7
3L06 C1	IL12 C7
3L07 C2	IL13 C7
3L08 C3	IL14 C7
3L09 C2	IL15 D7
3L10 C2	IL16 A3
3L11 C2	IL17 B4
3L12 D1	IL18 A5
3L13 D2	IL19 A6
3L15 E2	
3L16 E3	
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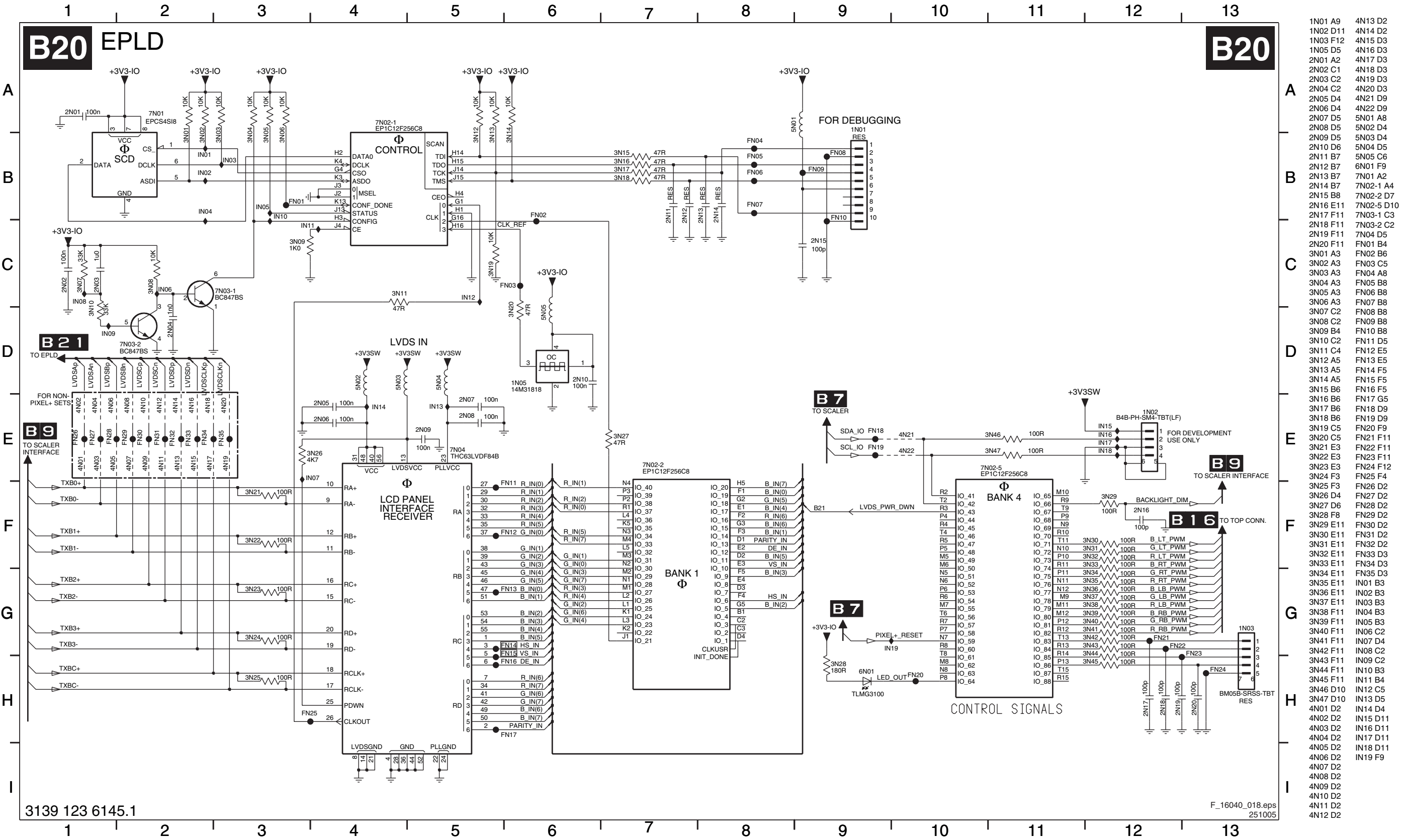
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SSB: Columbus



SSB: EPLD



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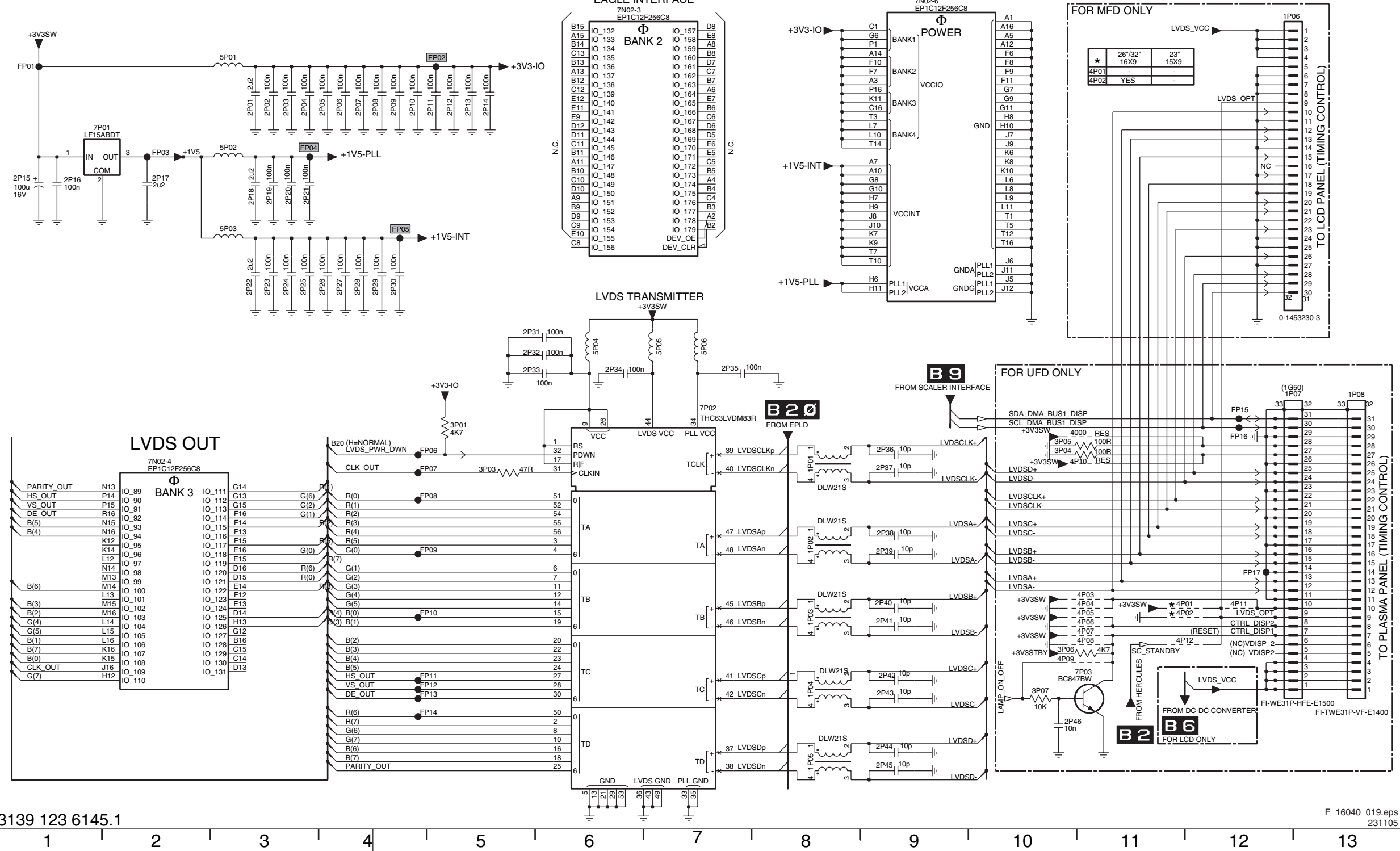
B7

SSB: EPLD

B21 EPLD

B21

- 1P01 D8 7P01 B2
1P02 E8 7P02 D7
1P03 F8 7P03 F10
1P04 F8 FP01 A1
1P05 G8 FP02 A5
1P06 A11 FP03 B2
1P07 D11 FP04 B4
1P08 D12 FP05 C4
2P01 B3 FP06 D5
2P02 B3 FP07 E5
2P03 B3 FP08 E5
2P04 B4 FP09 E5
2P05 B4 FP10 F5
2P06 B4 FP11 F5
2P07 B4 FP12 F5
2P08 B4 FP13 F5
2P09 B4 FP14 F5
2P10 B4 FP15 D11
2P11 B5 FP16 D11
2P12 B5 FP17 E1
2P13 B5
2P14 B5
2P15 B1
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2P17 B2
2P18 B3
2P19 B3
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2P36 D8
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2P41 F8
2P42 F8
2P43 F8
2P44 G8
2P45 G8
2P46 F10
3P01 D5
3P03 E5
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3P05 D10
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3P07 F9
4000 D10
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4P06 F10
4P07 F10
4P08 F10
4P09 F10
4P10 D10
4P11 F11
4P12 F11
5P01 A3
5P02 B3
5P03 C3
5P04 D6
5P05 D6
5P06 D7
7N02-3 A6
7N02-4 D2
7N02-6 A8



SSB: Diversity Tables B9-B21

B9 MUX-SYNC INTERFACE

Item	LC4.3x	LC4.8x	LC4.9x	Description
2A00			V	CER2 0603 X7R 16V 100N COL
2A01		V		CER1 0402 NP0 50V 100P COL
2A02		V		CER1 0402 NP0 50V 100P COL
2A03	V			CER2 0603 Y5V 10V 1U COL
2A12		V	V	CER2 0402 X7R 16V 10N COL
2A13		V	V	CER2 0402 Y5V 16V 100N COL
3A00		V		RST SM 0402 68R PM5 COL
3A01			V	RST SM 0402 68R PM5 COL
3A02	V	V		RST SM 0402 1K PM5 COL
3A06		V		RST SM 0603 10K PM5COL
3A06	V			RST SM 0603 JUMP. 0R05 COL
3A07			V	RST SM 0402 10K PM5 COL
3A07				RST SM 0402 68R PM5 COL
3A08		V		RST SM 0402 10K PM5 COL
3A10		V	V	RST SM 0402 10K PM5 COL
3A11		V	V	RST SM 0402 10K PM5 COL
3A13		V	V	RST SM 0402 10K PM5 COL
3A14		V	V	RST SM 0402 560R PM5 COL
4A03	V	V		RST SM 0603 JUMP. 0R05 COL
4A04			V	RST SM 0402 JUMP. 0R05 COL
4A05	V			RST SM 0402 JUMP. 0R05 COL
4A06	V			RST SM 0402 JUMP. 0R05 COL
5A00			V	FXDIND 0805 100MHZ 30R COL R
6A01		V	V	DIO REG SM BZX384-C3V9 COL R
7A00			V	IC SM PCA9515ADP (PHSE) R
7A02		V	V	TRA SIG SM BC847BW (COL) R
7A03		V	V	TRA SIG SM BC847BW (COL) R

B13 MUX-SYNC INTERFACE

ITEM	APIEU/AP-DVB (with Teletext)	EU-DVB (with Teletext)	NAFTALT & China (non-Teletext)	DESCRIPTION
2E00	V		V	CER2 0603 X5R 6V3 4U7 PM10 R
2E01	V		V	CER2 0603 X5R 6V3 4U7 PM10 R
2E02	V		V	CER2 0603 X5R 6V3 4U7 PM10 R
2E04	V	V		CER2 0402 X5R 6V3 1U PM20 R
2E05	V	V		CER2 0402 X5R 6V3 1U PM20 R
2E06	V	V		CER2 0402 X5R 6V3 1U PM20 R
3E06		V	V	RST SM 0402 47K PM5 COL
3E07	V		V	RST SM 0402 47K PM5 COL
3E08	V		V	RST SM 0402 47K PM5 COL
3E13	V	V		RST SM 0402 330R PM5 COL
3E14	V	V		RST SM 0402 330R PM5 COL
3E15	V	V		RST SM 0402 330R PM5 COL
3E16	V	V		RST SM 0402 330R PM5 COL
3E17	V	V		RST SM 0402 330R PM5 COL
3E18	V	V		RST SM 0402 330R PM5 COL

B15 ANALOG I/O SCART

Item	26/32PF	DVB.T 26/32PF	37/42PF	DVB.T 37/42PF	Description
1G01	V	V			SOC EURO H 21P F BK R-GRND B
1G01			V	V	SOC EURO H 21P F SHD R-GRND Y
1G02	V	V			SOC EURO H 21P F BK R-GRND B
1G02			V	V	SOC EURO H 21P F SHD R-GRND Y
1G03		V	V		CON H 32P F 0.50 SM FPC 0.3 R
2G29		V	V		ELCAP SM 16V 10U PM20 COL R
2G30		V	V		CER2 0603 X7R 16V 100N COL
2G31		V	V		CER2 0603 X7R 16V 100N COL
2G32			V	V	CER2 0603 Y5V 25V 100N COL
2G33		V	V		CER2 0603 Y5V 16V 220N COL
2G34		V	V		ELCAP SM 16V 10U PM20 COL R
2G35		V	V		CER2 0603 Y5V 25V 100N COL
2G36		V	V		CER2 0603 Y5V 10V 1U COL
2G37		V	V		RST SM 0603 330R PM5 COL
2G38		V	V		CER2 0603 Y5V 10V 1U COL
2G39		V	V		CER2 0603 Y5V 10V 1U COL
2G40		V	V		RST SM 0603 JUMP. 0R05 COL
2G41		V	V		RST SM 0603 330R PM5 COL
2G43		V	V		CER2 0603 X7R 50V 1N COL
2G45		V	V		CER2 0603 X7R 50V 1N COL
2G46		V	V		CER2 0603 X7R 50V 1N COL
2G63		V	V		CER2 0603 X5R 6V3 2U2 PM10 R
2G64		V	V		CER2 0603 X5R 6V3 2U2 PM10 R
2G65		V	V		CER2 0603 X5R 6V3 4U7 PM10 R
2G65		V	V		CER2 0603 X5R 6V3 4U7 PM10 R
2G66		V	V		CER2 0603 X5R 6V3 4U7 PM10 R
2G66		V	V		CER2 0603 X5R 6V3 4U7 PM10 R
3G63		V	V		RST SM 0603 10K PM5COL
3G64		V	V		RST SM 0603 10K PM5COL
3G65		V	V		RST SM 0603 10K PM5COL
3G66		V	V		RST SM 0603 150R PM5 COL
3G67		V	V		RST SM 0603 15K PM5 COL
3G68		V	V		RST SM 0603 15K PM5 COL
3G69		V	V		RST SM 0603 47K PM5 COL
3G70		V	V		RST SM 0603 47K PM5 COL
3G71		V	V		RST SM 0603 560R PM5 COL
3G72		V	V		RST SM 0603 10K PM5COL
3G73		V	V		RST SM 0603 47K PM5 COL
3G75		V	V		RST SM 0603 100R PM5 COL
3G76		V	V		RST SM 0603 100R PM5 COL
3G77		V	V		RST SM 0603 47K PM5 COL
3G79		V	V		RST SM 0603 47K PM5 COL
3G81		V	V		RST SM 0603 47K PM5 COL
3G83		V	V		RST SM 0603 100R PM5 COL
3G84		V	V		RST SM 0603 100R PM5 COL
3G86		V	V		RST SM 0603 47K PM5 COL
3G88		V	V		RST SM 0603 75R PM5 COL
3G89		V	V		RST SM 0603 47K PM5 COL
3G92		V	V		RST SM 0603 47K PM5 COL
3G93		V	V		RST SM 0603 47K PM5 COL
3G94		V	V		RST SM 0603 47K PM5 COL
3G95		V	V		RST SM 0603 47K PM5 COL
4G09		V	V		RST SM 0603 JUMP. 0R05 COL
4G11	V		V		RST SM 0603 JUMP. 0R05 COL
4G12	V		V		RST SM 0603 JUMP. 0R05 COL
4G13	V		V		RST SM 0603 JUMP. 0R05 COL
4G14	V		V		RST SM 0603 JUMP. 0R05 COL
4G15	V		V		RST SM 0603 JUMP. 0R05 COL
4G16	V		V		RST SM 0603 JUMP. 0R05 COL
4G17	V		V		RST SM 0603 JUMP. 0R05 COL
4G18	V		V		RST SM 0603 JUMP. 0R05 COL
4G19	V		V		RST SM 0603 JUMP. 0R05 COL
4G22	V		V		RST SM 0603 JUMP. 0R05 COL
5G01		V	V		FXDIND 0603 100MHZ 120R COL R
6G02		V	V		DIO SIG SM BAS316 (COL) R
7G07		V	V		IC SM 74HC4053D (PHSE) R
7G08		V	V		TRA SIG SM BC847B (COL) R
7G09		V	V		IC SM ADG734BRUZ (ANA0) R

B16 SIDE CONNECTORS

Item	LC4.3x - CINCH	LC4.3E - SCART	LC4.9x - PDP	LC4.8x - LCD	Description
1J00			V		CON V 10P M 2.00 PH B
1J01			V	V	CON V 11P M 2.00 PH B
1J02	V	V			CON V 12P M 2.00 PH B
1J03	V	V			CON V 3P M 2.00 PH B
1J07			V	V	FUSE SM T 3A 125V UL R
1J08			V	V	FUSE SM F 630MA 50V UL R
2J31			V	V	CER1 0402 NP0 50V 100P COL
3J03	V	V		V	RST SM 0402 68R PM5 COL
3J04	V	V		V	RST SM 0402 JUMP. 0R05 COL
5J04			V	V	IND FXD 1206 EMI 100MHZ 120R R

B17 SIDE CONNECTORS

Item	LC4.3x - MES styling	LC4.3x - Arch Styling	LC4.8x - LCD	LC4.9x - PDP	Description
1K00	V		V	V	CON V 6P M 2.00 PH B
1K01	V				CON V 12P M 2.00 PH B
1K03		V			CON V 20P F 1.25 FFC 0.3 B
1K04			V	V	CON V 11P M 2.00 PH B
2K15	V	V			CER1 0402 NP0 50V 100P COL
3K08	V	V			RST SM 0402 68R PM5 COL
4K02			V	V	RST SM 0603 JUMP. 0R05 COL
4K06		V			RST SM 0402 JUMP. 0R05 COL
5K01	V	V		V	FXDIND SM 0603 1U PM10 COL R

B18 ADC

Item	non-DVB sets with 3D Comb Filter	DVB sets with 3D Comb Filter	Description
3L38		V	RST SM 0402 JUMP. 0R05 COL
4L05		V	RST SM 0402 JUMP. 0R05 COL
5L04		V	RST SM 0603 JUMP. 0R05 COL

B20 & B21 PIXEL PLUS

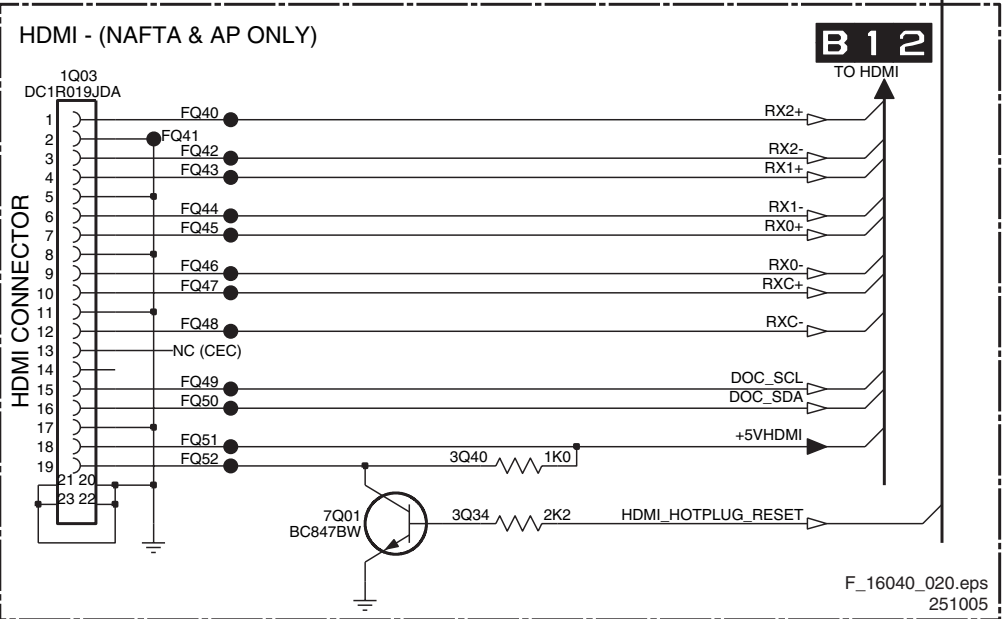
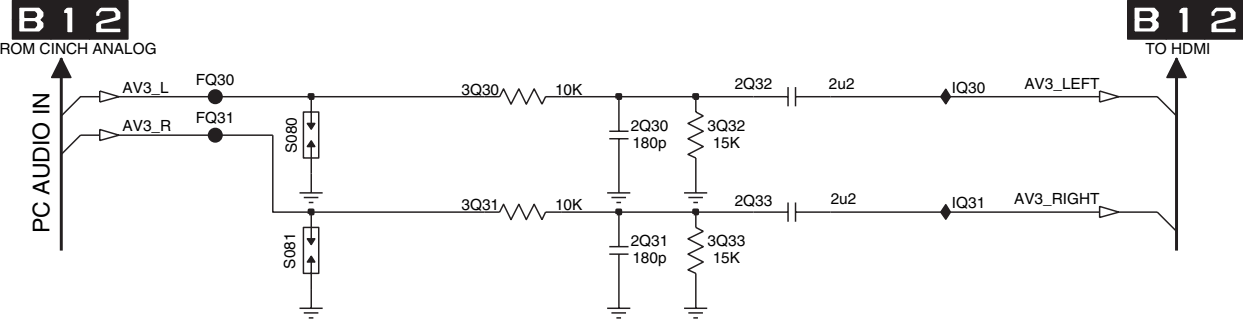
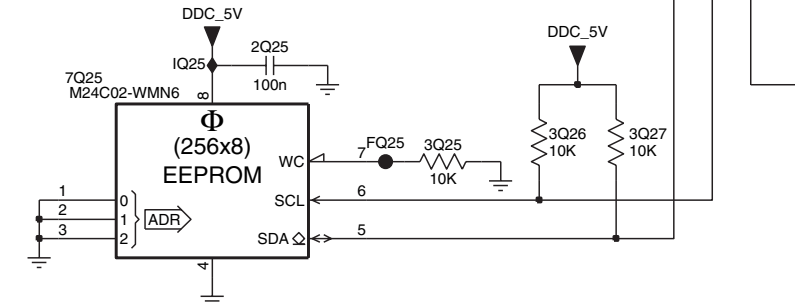
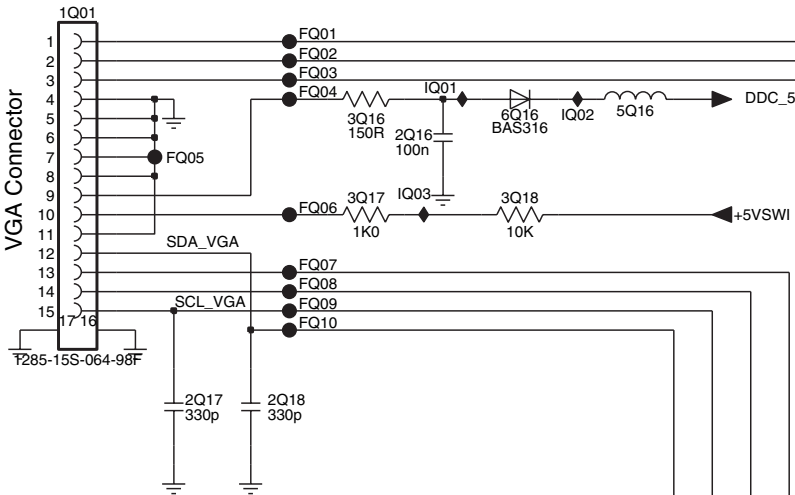
Item	LC4.3 non PIXEL+	LC4.3 with PIXEL+	42PF7320/28	LC4.8/LC4.9 non PIXEL+	LC4.8/LC4.9 with PIXEL+	Description
1N02		V	V			CON V 4P M 2.00 SM PH R
1N05		V	V			OSC XTL SM 14M31818 15P OC R
1P06	V	V				CON V 30P M 1.25 SM 1453230 R
1P07		V	V	V		CON H 31P F 1.25 SM FI-WE R
2N01		V	V	V		CER2 0402 Y5V 16V 100N COL
2N02		V	V	V		CER2 0402 Y5V 16V 100N COL
2N03		V	V	V		CER2 0402 X5R 6V3 1U PM20 R
2N04		V	V	V		CER2 0402 X7R 50V 1N COL
2N05		V	V	V		CER2 0402 Y5V 16V 100N COL
2N06		V	V	V		CER2 0402 Y5V 16V 100N COL
2N07		V	V	V		CER2 0402 Y5V 16V 100N COL
2N08		V	V	V		CER2 0402 Y5V 16V 100N COL
2N09		V	V	V		CER2 0402 Y5V 16V 100N COL
2N10		V	V	V		CER2 0402 Y5V 16V 100N COL
2N11		V	V	V		CER1 0402 NP0 50V 100P COL
2N12		V	V	V		CER1 0402 NP0 50V 100P COL
2N13		V	V	V		CER1 0402 NP0 50V 100P COL
2N14		V	V	V		CER1 0402 NP0 50V 100P COL
2N15		V	V	V		CER1 0402 NP0 50V 100P COL
2N16		V	V	V		CER1 0402 NP0 50V 100P COL
2P01		V	V	V		CER2 0603 X5R 6V3 2U2 PM10 R
2P02		V	V	V		CER2 0402 Y5V 16V 100N COL
2P03		V	V	V		CER2 0402 Y5V 16V 100N COL
2P04		V	V	V		CER2 0402 Y5V 16V 100N COL
2P05		V	V	V		CER2 0402 Y5V 16V 100N COL
2P06		V	V	V		CER2 0402 Y5V 16V 100N COL
2P07		V	V	V		CER2 0402 Y5V 16V 100N COL
2P08		V	V	V		CER2 0402 Y5V 16V 100N COL
2P09		V	V	V		CER2 0402 Y5V 16V 100N COL
2P10		V	V	V		CER2 0402 Y5V 16V 100N COL
2P11		V	V	V		CER2 0402 Y5V 16V 100N COL
2P12		V	V	V		CER2 0402 Y5V 16V 100N COL
2P13		V	V	V		CER2 0402 Y5V 16V 100N COL
2P14		V	V	V		CER2 0402 Y5V 16V 100N COL
2P15		V	V	V		ELCAP SM 16V 100U PM20 COL R
2P16		V	V	V		CER2 0402 Y5V 16V 100N COL
2P17		V	V	V		CER2 0603 X5R 6V3 2U2 PM10 R
2P18		V	V	V		CER2 0603 X5R 6V3 2U2 PM10 R
2P19		V	V	V		CER2 0402 Y5V 16V 100N COL
2P20		V	V	V		CER2 0402 Y5V 16V 100N COL
2P21		V	V	V		CER2 0402 Y5V 16V 100N COL
2P22		V	V	V		CER2 0603 X5R 6V3 2U2 PM10 R
2P23		V	V	V		CER2 0402 Y5V 16V 100N COL
2P24		V	V	V		CER2 0402 Y5V 16V 100N COL
2P25		V	V	V		CER2 0402 Y5V 16V 100N COL
2P26		V	V	V		CER2 0402 Y5V 16V 100N COL
2P27		V	V	V		CER2 0402 Y5V 16V 100N COL
2P28		V	V	V		CER2 0402 Y5V 16V 100N COL
2P29		V	V	V		CER2 0402 Y5V 16V 100N COL
2P30		V	V	V		CER2 0402 Y5V 16V 100N COL
2P31		V	V	V		CER2 0402 Y5V 16V 100N COL
2P32		V	V	V		CER2 0402 Y5V 16V 100N COL
2P33		V	V	V		CER2 0402 Y5V 16V 100N COL
2P34		V	V	V		CER2 0402 Y5V 16V 100N COL
2P35		V	V	V		CER2 0402 Y5V 16V 100N COL
3N01		V	V	V		RST SM 0402 10K PM5 COL
3N02		V	V	V		RST SM 0402 10K PM5 COL
3N03		V	V	V		RST SM 0402 10K PM5 COL
3N04		V	V	V		RST SM 0402 10K PM5 COL
3N05		V	V	V		RST SM 0402 10K PM5 COL
3N06		V	V	V		RST SM 0402 10K PM5 COL
3N07		V	V	V		RST SM 0603 33K PM5 COL
3N08		V	V	V		RST SM 0402 10K PM5 COL
3N09		V	V	V		RST SM 0402 1K PM5 COL
3N10		V	V	V		RST SM 0402 33K PM5 COL
3N11		V	V	V		RST SM 0402 47R PM5 COL
3N12		V	V	V		RST SM 0402 10K PM5 COL
3N13		V	V	V		RST SM 0402 10K PM5 COL
3N14		V	V	V		RST SM 0402 10K PM5 COL
3N15		V	V	V		RST SM 0402 47R PM5 COL
3N16		V	V	V		RST SM 0402 47R PM5 COL

Item	LC4.3 non PIXEL+	LC4.3 with PIXEL+	42PF7320/28	LC4.8/LC4.9 non PIXEL+	LC4.8/LC4.9 with PIXEL+	Description
3N17		V	V	V		RST SM 0402 47R PM5 COL
3N18		V	V	V		RST SM 0402 47R PM5 COL
3N19		V	V	V		RST SM 0402 10K PM5 COL
3N20		V	V	V		RST SM 0402 47R PM5 COL
3N21		V	V	V		RST SM 0402 100R PM5 COL</

SSB: Digital I/O

B22 DIGITAL IO

AV3: VGA + 2fHYPbPr



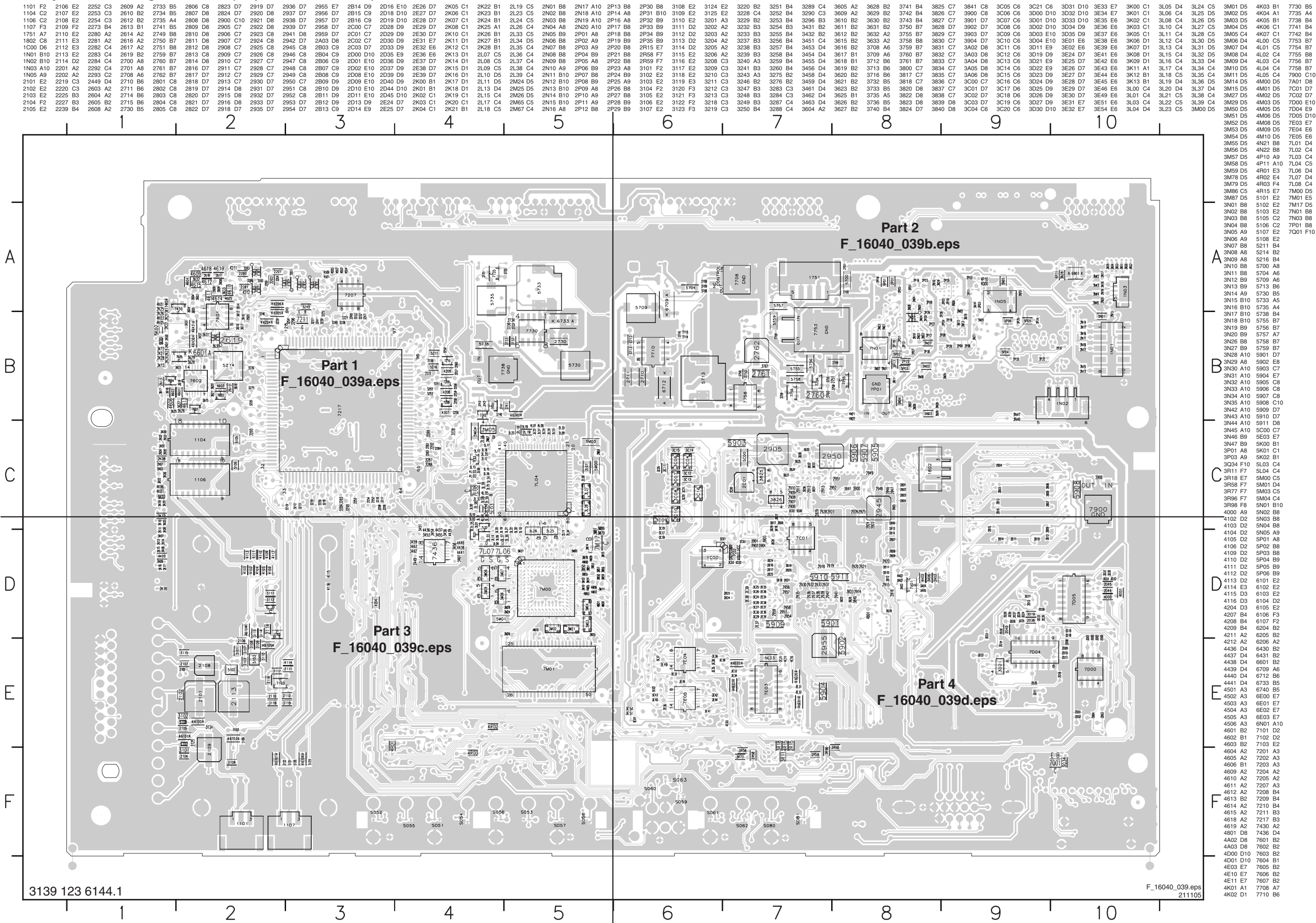
- 1Q01 A1
- 1Q03 E6
- 1R03-2 E1
- 2Q01 A4
- 2Q06 B4
- 2Q11 B4
- 2Q16 A2
- 2Q17 B1
- 2Q18 B2
- 2Q21 C5
- 2Q23 D5
- 2Q25 C2
- 2Q30 E3
- 2Q31 E3
- 2Q32 E3
- 2Q33 E3
- 3Q01 A5
- 3Q06 B5
- 3Q11 B5
- 3Q16 A2
- 3Q17 A2
- 3Q18 A3
- 3Q21 C4
- 3Q22 C5
- 3Q23 D4
- 3Q24 D5
- 3Q25 D2
- 3Q26 D3
- 3Q27 D3
- 3Q28 D4
- 3Q29 D4
- 3Q30 E2
- 3Q31 E2
- 3Q32 E3
- 3Q33 E3
- 3Q34 F7
- 3Q40 F7
- 5Q01 A5
- 5Q06 A5
- 5Q11 B5
- 5Q16 A3
- 5Q21 C4
- 5Q23 D4
- 6Q16 A3
- 7Q01 F7
- 7Q25 D1
- FQ01 A2
- FQ02 A2
- FQ03 A2
- FQ04 A2
- FQ05 A1
- FQ06 A2
- FQ07 B2
- FQ08 B2
- FQ09 B2
- FQ10 B2
- FQ25 D2
- FQ30 E1
- FQ31 E1
- FQ32 E1
- FQ40 E6
- FQ41 E6
- FQ42 E6
- FQ43 E6
- FQ44 E6
- FQ45 E6
- FQ46 E6
- FQ47 E6
- FQ48 F6
- FQ49 F6
- FQ50 F6
- FQ51 F6
- FQ52 F6
- IQ01 A2
- IQ02 A3
- IQ03 A2
- IQ21 D8
- IQ23 C8
- IQ25 C1
- IQ28 D8
- IQ29 D8
- IQ30 E4
- IQ31 E4
- S080 E2
- S081 E2

B23 CINCH ANALOGUE IO (1FH)



R002 F14	4R15 I9
R001 F14	4R16 I10
R002 G1	4R41 G1
R003 H1	4R42 H2
R003 H2	4R43 H1
R006 E1	4R61 A10
R006 E2	4R62 B11
R007 A1	4R63 C12
R007 A2	4R64 C11
R007 E3	4R68 E8
R004 E4	4R69 F10
R004 E5	4R70 F11
R004 E6	4R75 G10
R013 D9	4R68 C9
R013 D9	4R69 A12
R013 D9	4R71 A11
R023 G3	4R62 F2
R023 G4	4R63 F2
R024 H4	4R64 F2
R024 H5	4R65 F2
R024 H6	4R66 I2
R024 H7	4R67 I2
R025 I3	4R68 I2
R025 I4	4R72 D3
R025 I5	4R74 F3
R025 I3	4R75 H10
R025 H10	4R76 A11
R025 H9	4R77 A10
R025 H8	4R68 H11
R026 A10	4R00 E2
R026 A11	4R03 E2
R026 B10	4R04 E2
R026 B10	4R07 F14
R026 A12	4R08 F14
R026 A10	4R09 F14
R026 A10	4R10 F14
R026 C10	4R11 F14
R026 D9	4R12 F14
R027 E9	4R13 G14
R027 E9	4R14 G14
R027 D12	4R15 G14
R027 D12	4R16 B1
R027 D12	4R17 G14
R027 E12	4R18 G14
R027 H13	4R19 H14
R028 A4	4R20 G14
R028 A5	4R21 G14
R028 A3	4R22 H14
R028 A4	4R25 H14
R028 A5	4R26 H14
R028 A6	4R27 H14
R030 E2	4R28 A1
R030 E3	4R29 H14
R030 E2	4R34 G2
R030 E2	4R35 G2
R030 E2	4R41 G2
R030 E2	4R42 G2
R030 E8	4R46 H1
R030 G9	4R47 G2
R031 H9	4R50 I2
R031 H9	4R52 I2
R031 D3	4R53 A1
R031 D3	4R54 I2
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R031 D3	4R56 I2
R031 D3	4R57 A1
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R031 D3	4R59 E1
R031 D3	4R60 C3
R031 D3	4R61 B2
R031 D3	4R62 H2
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R031 D3	4R64 H2
R031 D3	4R65 H2
R031 D3	4R66 H2
R031 D3	4R67 H2
R031 D3	4R68 H2
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R031 D3	4R76 H2
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R031 D3	4R81 H2
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R031 D3	4R81 H2
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R031 D3	4R84 H2
R031 D	

Layout Small Signal Board (Top Side Overview)



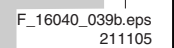
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C



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C



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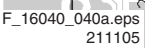


Part 4

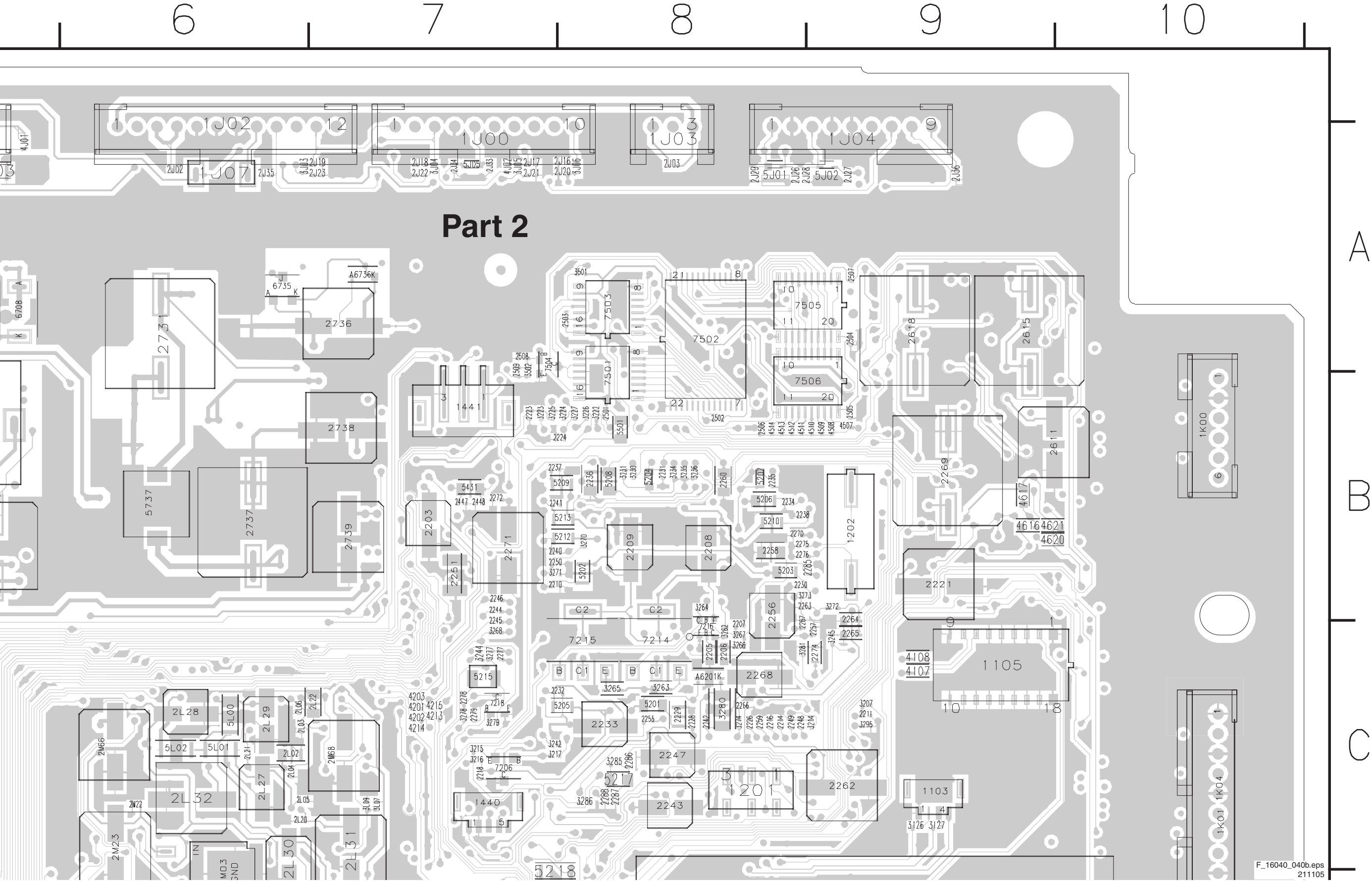


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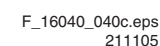
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Layout Small Signal Board (Bottom Side Part 2)

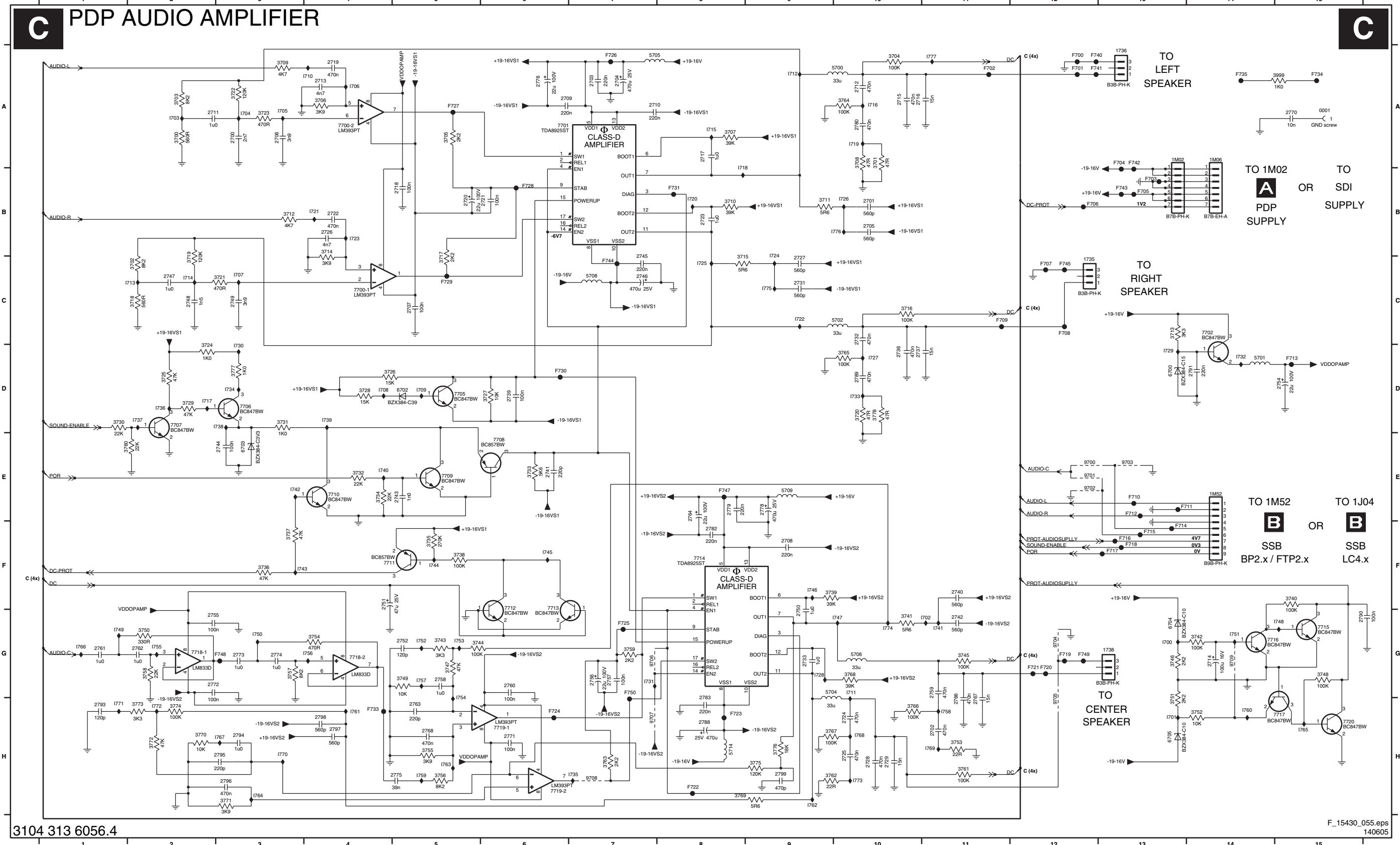


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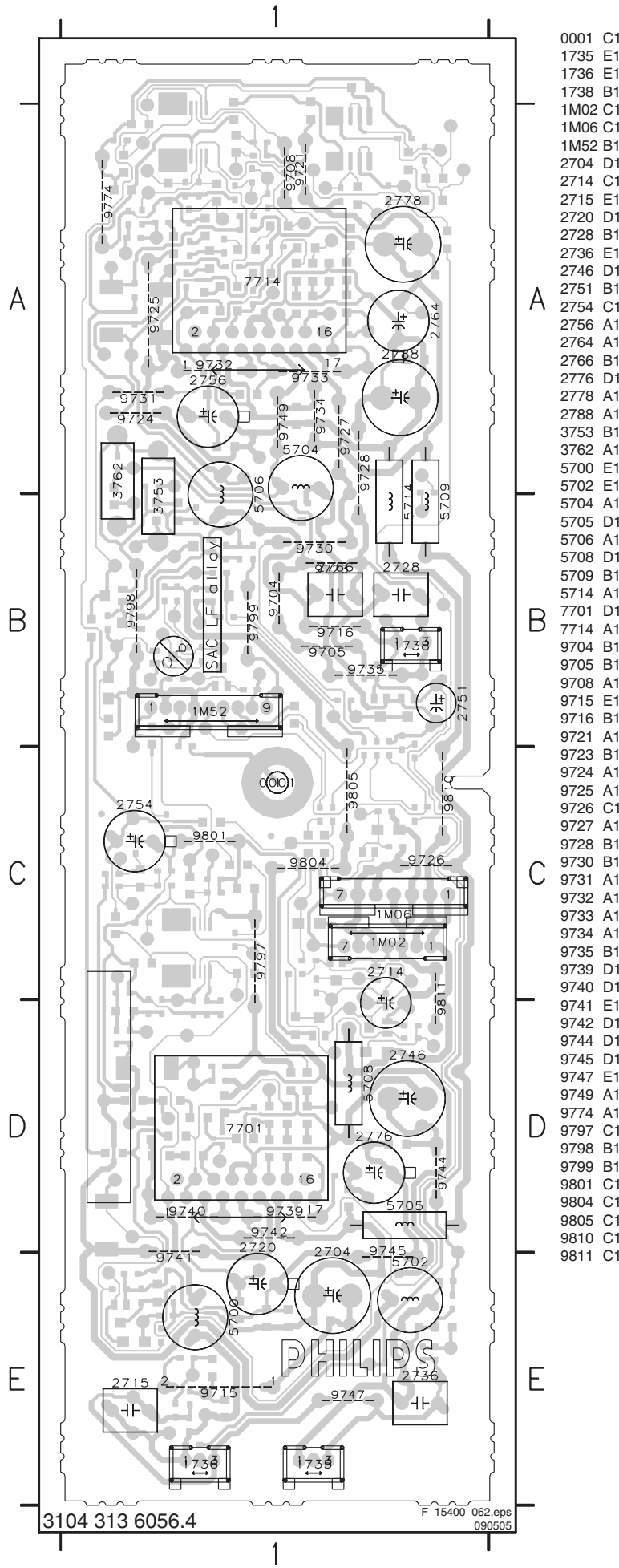


PDP Audio Amplifier Panel

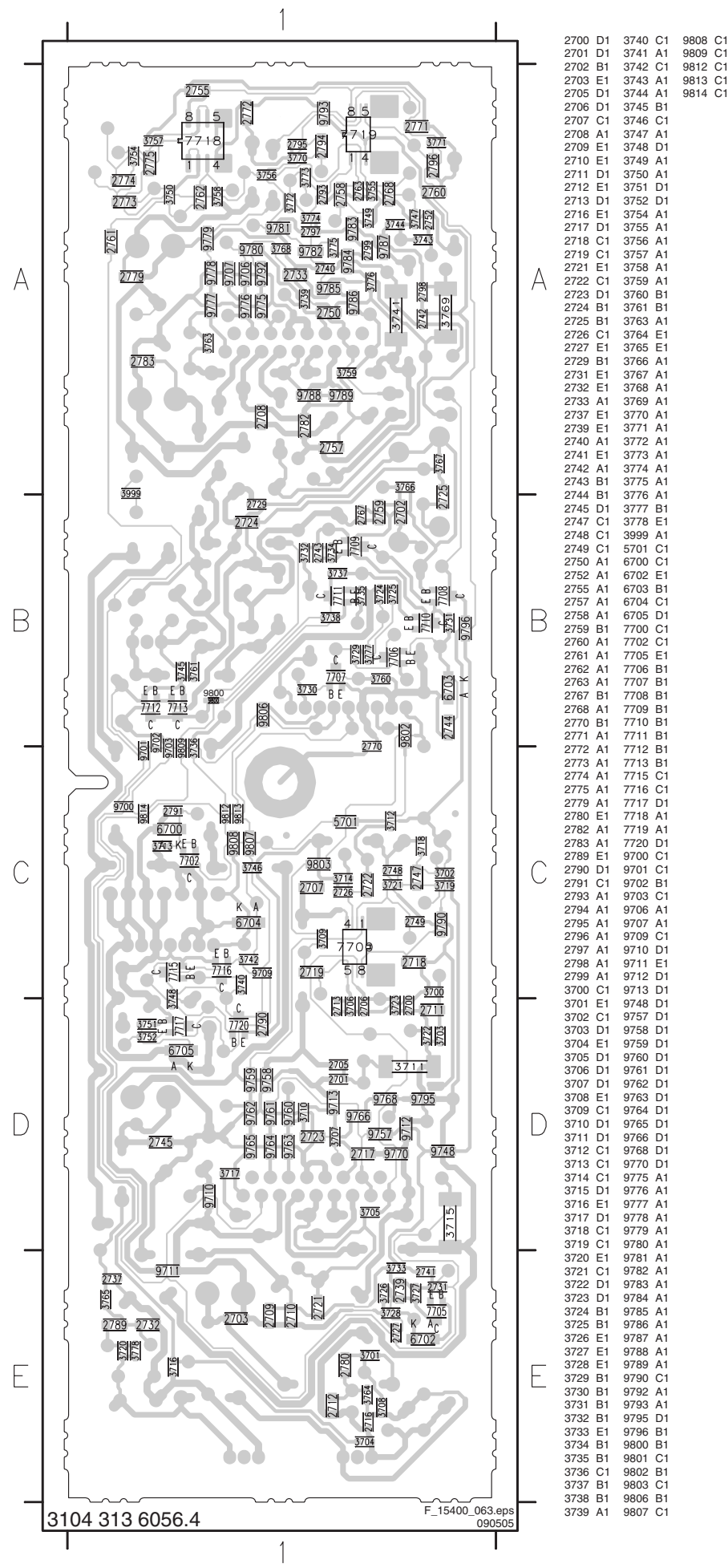
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1735 C12	2706 A3	2718 B5	2731 C9	2746 C7	2759 G11	2773 G3	2791 D14	3704 A10	3716 C10	3728 D4	3740 F15	3752 H14	3764 A10	3776 H9	5714 H8	7707 D2	7718-2 G4	9708 H7	F710 E13	F722 H8	F735 A14	I701 H13	I713 C2	I725 C8	I737 D2	I749 G1	I761 H4	I773 H10
1736 A13	2707 C5	2719 A4	2732 C10	2747 C2	2760 G6	2774 G3	2793 H1	3705 A5	3717 C5	3729 D2	3741 G10	3753 H11	3765 D10	3777 D3	6700 D13	7708 E6	7719-1 H6	9709 G14	F711 E14	F723 H8	F740 A12	I702 G11	I714 C2	I726 B10	I738 D3	I750 G3	I762 H9	I774 G10
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1M52 E14	2711 A2	2723 B8	2739 D6	2751 F4	2764 E8	2779 E8	2797 H4	3709 A3	3721 C3	3733 E6	3745 G11	3757 G3	3769 H8	5701 D14	6705 H3	7712 G6	9701 E12	F703 B13	F715 F13	F727 A5	F744 C7	I706 A4	I718 A8	I730 D3	I742 E3	I754 G5	I766 G1	
2700 A3	2712 A10	2724 H10	2740 F11	2752 G5	2766 H11	2780 A10	2798 H4	3710 B8	3722 A3	3734 E4	3746 G13	3758 G2	3770 H2	5702 C10	7700-1 C4	7713 G6	9702 E12	F704 A13	F716 F13	F728 B6	F745 C12	I707 C3	I719 A10	I731 G7	I743 F3	I755 G2	I767 H3	
2701 B10	2713 A4	2725 H10	2741 E6	2754 D15	2767 H11	2782 F8	2799 H9	3711 B9	3723 A3	3735 E5	3747 G5	3759 G7	3771 H3	5704 G9	7700-2 A4	7714 F8	9703 E13	F705 B13	F717 F13	F729 C5	F747 E8	I708 D4	I720 B8	I732 D14	I744 F5	I756 G4	I768 H10	
2702 H11	2714 G14	2726 B4	2742 G11	2755 G2	2768 H5	2783 G8	2790 A2	3712 B3	3724 C2	3736 F3	3748 G15	3760 E2	3772 H2	5705 A7	7701 A7	7715 G15	9704 G12	F706 B12	F718 F13	F730 D6	F748 G3	I709 D5	I721 B4	I733 D10	I745 F6	I757 G5	I769 H11	
2703 A7	2715 A10	2727 C9	2743 E5	2756 G7	2770 A15	2788 H8	2797 A10	3713 C13	3725 D2	3737 F3	3749 G5	3761 H11	3773 H2	5706 G10	7702 C14	7716 G14	9705 H12	F707 C12	F719 G12	F731 B8	F749 G12	I710 A4	I722 C9	I734 D3	I746 F9	I758 H11	I770 H3	
2704 A7	2716 A10	2728 H10	2744 E3	2757 G7	2771 H6	2789 D10	2792 C2	3714 B4	3726 D4	3738 F5	3750 G2	3762 H9	3774 H2	5708 C7	7705 D5	7717 H14	9706 G7	F708 C12	F720 G12	F733 H4	F750 G7	I711 G10	I723 B4	I735 H7	I747 G10	I759 H5	I771 H1	



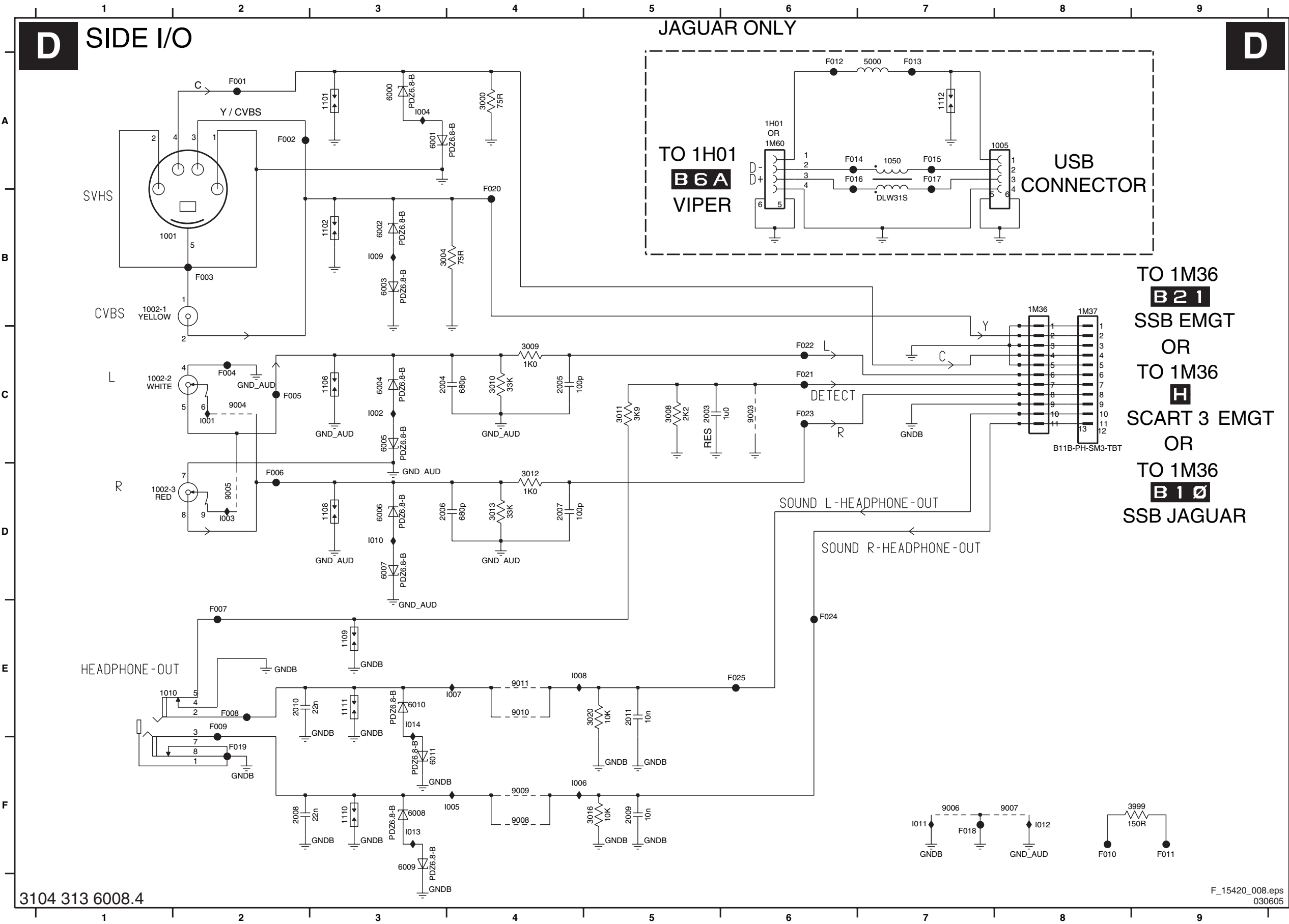
Layout PDP Audio Amplifier Panel (Top Side)



Layout PDP Audio Amplifier Panel (Bottom Side)

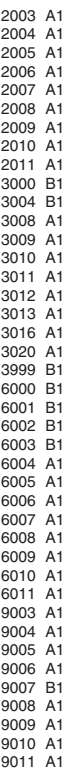
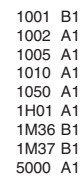


Side I/O Panel

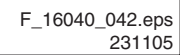


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1005 A8	F006 D2
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1050 A7	F008 E2
1101 A3	F009 E2
1102 B3	F010 F8
1106 C3	F011 F9
1108 D3	F012 A6
1109 E3	F013 A7
1110 F3	F014 A6
1111 E3	F015 A7
1112 A7	F016 A6
1H01 A6	F017 A7
1M36 B8	F018 F7
1M37 B8	F019 F2
2003 C5	F020 B4
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2005 C4	F022 C6
2006 D3	F023 C6
2007 D4	F024 E6
2008 F2	F025 E6
2009 F5	I001 C2
2010 E2	I002 C3
2011 E5	I003 D2
3000 A4	I004 A3
3004 B3	I005 F4
3008 C5	I006 F4
3009 C4	I007 E4
3010 C4	I008 E4
3011 C5	I009 B3
3012 D4	I010 D3
3013 D4	I011 F7
3016 F5	I012 F8
3020 E5	I013 F3
3999 F9	I014 E3
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6000 A3	
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6010 E3	
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9004 C2	
9005 D2	
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F001 A2	

Layout Side I/O Panel (Bottom Side)



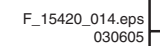
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1703 A2	1706 A3	3003 C2	3006 C1	3009 C2	9002 C1	F002 A4	I006 C1	I009 C2	I101 B1	I104 B2	



The figure displays two circuit board layouts. The top layout features components labeled 1701, 1702, 1703, 1704, 1705, 1706, and 1M01. The bottom layout features components labeled 9001, 9002, 9003, 9004, 9005, 9006, 9007, 9008, 3001, 3002, 3003, 3004, 3005, 3006, 3007, 3008, and 3009.

F_16040_043.eps
231105

LED PANEL



SAC LF alloy

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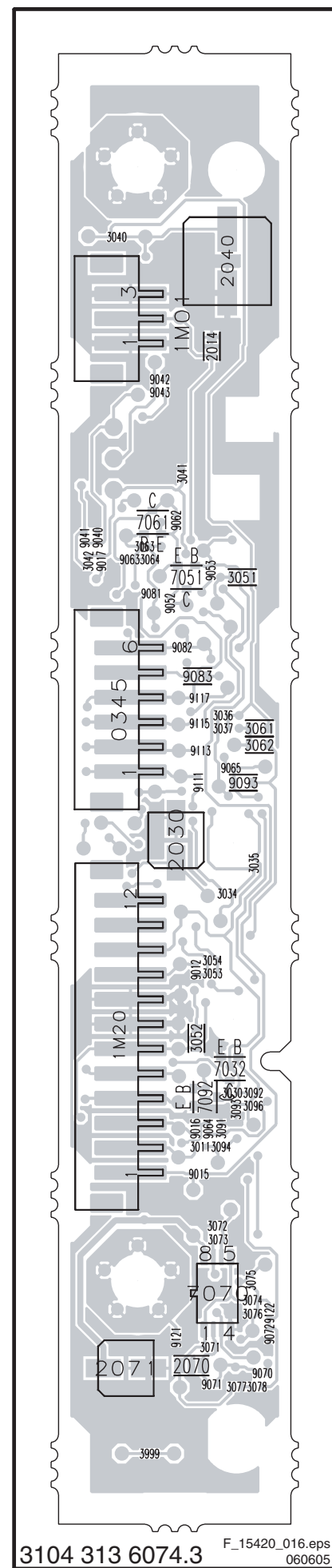
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3104 313 6074.3

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9120	--



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1M20	--
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This image shows a full page of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. In the bottom right corner, there is small black text that reads "E_06532_012.eps" and "131004".

E_06532_012.eps
131004

8. Alignments

Index of this chapter:

- 8.1 General Alignment Conditions
- 8.2 Hardware Alignments
- 8.3 Software Alignments

Note: Figures below can deviate slightly from the actual situation, due to the different set executions.

General: The Service Default Mode (SDM) and Service Alignment Mode (SAM) are described in chapter 5. Menu navigation is done with the Cursor Up, Down, Left or Right keys of the remote control transmitter.

8.1 General Alignment Conditions

Perform all electrical adjustments under the following conditions:
Mains voltage and frequency: 100-240 V / 50/60 Hz.
Allow the set to warm up for approximately 10 minutes.
Test probe: $R_i > 10 \text{ M}\Omega$; $C_i < 2.5 \text{ pF}$.

8.2 Hardware Alignments

There are no hardware alignments foreseen for the plasma-TV.

8.3 Software Alignments

With the software alignments of the Service Alignment Mode (SAM) the geometry, white tone and tuner (IF) can be aligned. To store the data: Use the RC button Menu to switch to the main menu and next, switch to 'Stand-by' mode.

8.3.1 SAM Menu

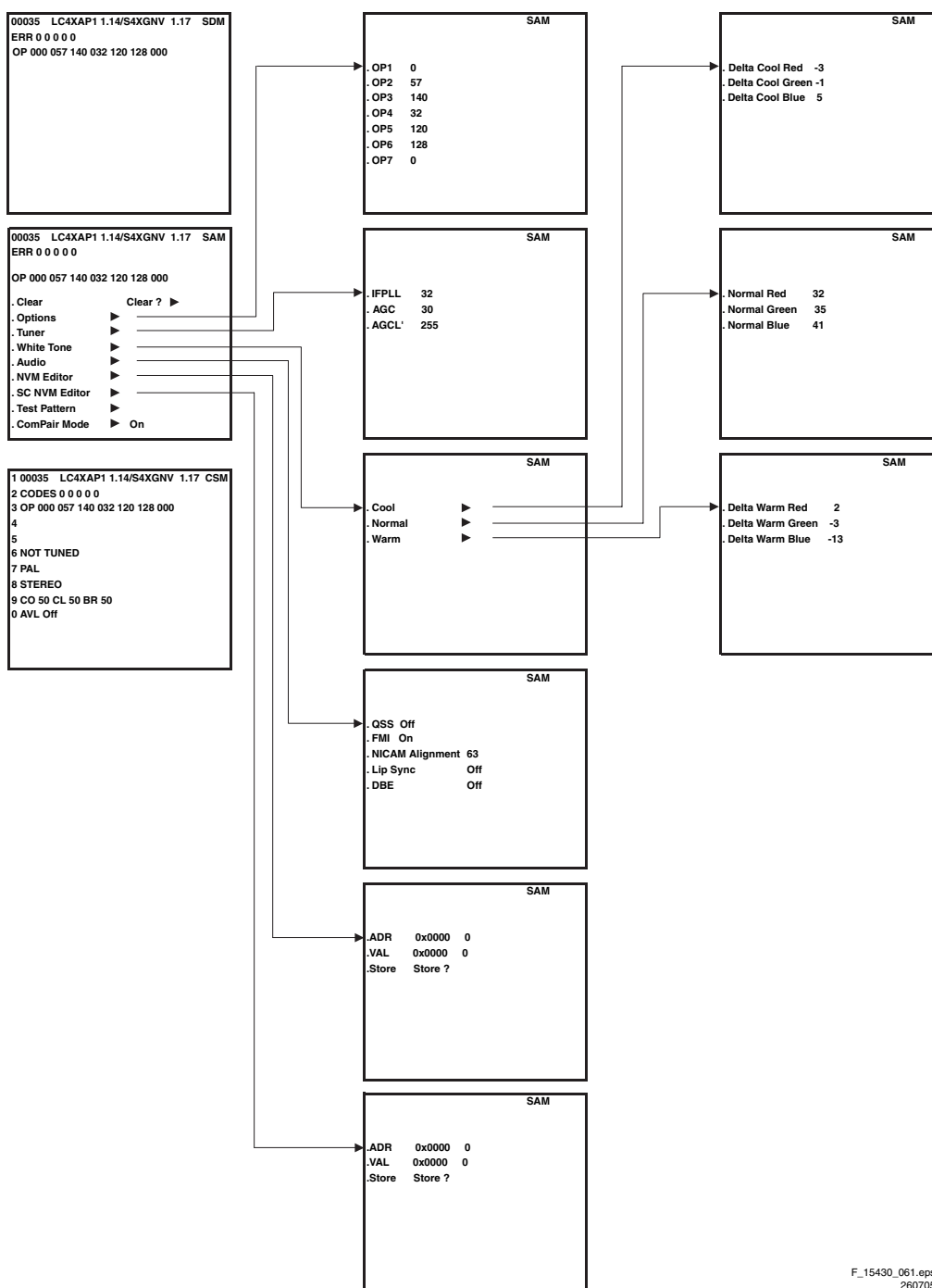
F_15430_061.eps
260705

Figure 8-1 Overview SAM menu.

8.3.2 Tuner Adjustment

AGC (RF AGC Take Over Point)

- Activate the SAM menu.
- Go to the sub-menu Tuner.
- Select the AGC sub-menu.
- Adjust the AGC value to AGC = 27.
- Adjust the AGC L' value to AGC L' = 27 (Europe only).
- Adjust the IFPLL value to IFPLL = 32 (Europe only).
- Switch the set to standby to store the data.

8.3.3 ADC Gain and Grey Scale Alignment

The table below shows a number of NVM settings used for each model of TV set. Be sure to use the correct editor in the SAM menu (NVM Editor or SC NVM Editor), because the first one is used for the Hercules NVM, and the second one for the SCALER (SC) part of the TV set. For further important NVM settings, see also the other NVM tables elsewhere in this manual.

Caution:

- **Do not change the NVM settings without understanding the function of each setting, because incorrect NVM settings may seriously hamper the correct functioning of the TV set!**
- **Do not change the Scaler NVM settings, as this will hamper the DVI functionality of the TV set!**
- Always note down the existing NVM settings, before changing the settings. This will enable you to return to the original settings, if the new settings turn out to be incorrect.

Table 8-1 ADC gain and grey scale alignment

SDTV ADC Gain settings: Use the NVM Editor in SAM to set these values in the Hercules NVM		
		This model is with ADC & Columbus 3D Combfilter
Setting	Hercules NVM Address (decimal value)	42PF7320/28
NVM_ADC_GAIN_R	006	145
NVM_ADC_GAIN_G	007	185
NVM_ADC_GAIN_B	008	165

SDTV Greyscale settings: Use the SC NVM Editor in SAM to set these values in the Scaler NVM		
		This model is with ADC & Columbus 3D Combfilter
Setting	Scaler NVM Address (decimal value)	42PF7320/28
ADC_RED_OFFSET2	338	080
ADC_GRN_OFFSET2	339	080
ADC_BLU_OFFSET2	340	080
ADC_RED_GAIN	341	154
ADC_GRN_GAIN	343	154
ADC_BLU_GAIN	345	154
PC Greyscale settings		
		This model is with ADC & Columbus 3D Combfilter
Setting	Scaler NVM Address (decimal value)	42PF7320/28
ADC_RED_OFFSET2	325	080
ADC_GRN_OFFSET2	326	080
ADC_BLU_OFFSET2	327	080
ADC_RED_GAIN	328	154
ADC_GRN_GAIN	330	154
ADC_BLU_GAIN	332	154
HD Greyscale settings		
		This model is with ADC & Columbus 3D Combfilter
Setting	Scaler NVM Address (decimal value)	42PF7320/28
ADC_RED_OFFSET2	351	064
ADC_GRN_OFFSET2	352	082
ADC_BLU_OFFSET2	353	064
ADC_RED_GAIN	354	159
ADC_GRN_GAIN	356	144
ADC_BLU_GAIN	358	147

8.3.4 Sound

- No adjustments needed for sound.

8.3.5 Options

Options OP1...OP7 in the SAM menu can be used for quickly restoring 64 features or settings of the HERCULES part of the TV set to their original default factory values (8 groups of 8 features/settings each). When the decimal value of one option byte OP1...OP7 is changed (see the first table below) then a group of 8 bits, representing 8 HERCULES options or features, is changed as well (see the second table below for a detailed description of the features or settings that are changed). The second table shows which option byte (OP1...OP7) represents which group of 8 option bits. Each bit (0...7) switches a particular HERCULES feature or setting ON or OFF, depending on its value (1 or 0).

It is also possible to change the features or settings mentioned in the second table directly at bit level, by means of the NVM Editor in the SAM menu. In the NVM Editor, first the correct NVM address (ADR) has to be entered, then the correct value (VAL, 1 or 0) for each bit (see second table), and finally the settings have to be stored (STORE). For quickly restoring the HERCULES part of the TV set to its original factory settings, however, it is more convenient to simply enter the default factory settings OP1...OP7 that are given in the first table below. How to do this, is described in the next paragraph.

How to Change an Option Byte

As has been explained above, an Option byte (OP) represents a number of different HERCULES options. Changing these bytes directly makes it possible to set all HERCULES options very fast. All options are controlled via seven option bytes. Select the option byte (OP1.. OP7) with the Menu Up/ Down keys, and enter the new (decimal) value. For the correct Factory Default settings, see the first table below. For more detailed information, see the second table.

Leaving the Option submenu saves the changes in the Option Byte settings. Some changes will only take effect after the set has been switched "off" and "on" with the AC power switch (cold start).

Table 8-2 Option codes OP1...OP7

Option table for quickly restoring the HERCULES to its Factory Default settings	
Model number	42PF7320/28
OP1	128
OP2	5
OP3	77
OP4	226
OP5	252
OP6	90
OP7	16
Options (can be changed only via the SAM menu)	Total decimal value for each option per model number

How to Change Options at Bit Level

If you wish to know which features or settings of the HERCULES are changed via OP1...OP7, or if you want to change each option or feature bit by bit, use the more detailed table below.

Note: the table below contains only part of the NVM settings that can be changed. A second range of settings and features can be found in Chapter 5 of this manual, in table **NVM Default values**. The settings mentioned there can only be changed via the NVM editor. For further settings, see also the table "ADC Gain and Grey scale alignment" elsewhere in this manual.

Table 8-3 Option codes in detail, at bit level

Option byte & bit table for restoring the TV set to its original Factory Default settings via the NVM Editor in the SAM menu		
	Model number	42PF7320/28
OP1		
Description of feature/option to be switched ON or OFF		
bit 7 (msb)	OP_PHILIPS_TUNER	1
bit 6	OP_FM_RADIO	0
bit 5	OP_LNA	0
bit 4	OP_ATS // for EU	0
bit 3	OP_ACI	0
bit 2	OP_UK_PNP	0
bit 1	OP_VIRGIN_MODE	0
bit 0 (lsb)	OP_CHINA	0
	Total DEC Value	128
	Total HEX Value	80
OP2		
bit 7 (msb)	OP_HE8340	0
bit 6	OP_IBEX	0
bit 5	OP_CHANNEL_NAMING	0
bit 4	OP_LTI (Lum Transcient Improvmt)	0
bit 3	OP_TILT	0
bit 2	OP_FINE_TUNING	1
bit 1	OP_PIP_PHILIPS_TUNER	0
bit 0 (lsb)	OP_HUE	1
	Total DEC Value	5
	Total HEX Value	05
OP3		
bit 7 (msb)	OP_EW_FUNCTION	0
bit 6	OP_PIXEL_PLUS	0
bit 5	OP_PIP_SPLITTER // temp	0
bit 4	OP_SPLITTER // temp	0
bit 3	OP_VIRTUAL_DOLBY	1
bit 2	OP_WIDE_SCREEN	1
bit 1	OP_WSSB	0
bit 0 (lsb)	OP_OP_ME5 // OP_ME5 - 5/6 local buttons implementation	1
	Total DEC Value	77
	Total HEX Value	4D
OP4		
bit 7 (msb)	OP_LIP_SYNC	1
bit 6	OP_HD	1
bit 5	OP_ULTRA_BASS	1
bit 4	OP_DELTA_VOLUME	0
bit 3	OP_TAIWAN_KOREA	0
bit 2	OP_VOLUME_LIMITER	0
bit 1	OP_STEREO_DBX	1
bit 0 (lsb)	OP_STEREO_NICAM_2CS	0
	Total DEC Value	226
	Total HEX Value	E2
OP5		
bit 7 (msb)	OP_AV1	1
bit 6	OP_AV2	1
bit 5	OP_AV3	1
bit 4	OP_CVI	1
bit 3	OP_SVHS2	1
bit 2	OP_SVHS3	1
bit 1	OP_HOTEL_MODE	0
bit 0 (lsb)	OP_SIMPLE_FACTORY=OP_BTSC_AVSTEREO	0
	Total DEC Value	252
	Total HEX Value	FC
OP6		
bit 7 (msb)	OP_PERSONAL_ZAPPING	0
bit 6	OP_SMART_SURF	1
bit 5	OP_FMTRAP	0
bit 4	OP_COMBFILTER	1
bit 3	OP_ACTIVE_CONTROL	1
bit 2	OP_VIDEO_TEXT	0
bit 1	OP_LIGHT_SENSOR	1
bit 0 (lsb)	OP_TWIN_TEXT	0
	Total DEC Value	90
	Total HEX Value	5A
OP7		
bit 7 (msb)	OP_TIME_WIN1	0
bit 6	OP_DVB_USB = OP_MALAY	0
bit 5	OP_AMBILIGHT	0
bit 4	OP_COLUMBUS	1
bit 3	OP_DUMMY6	0
bit 2	OP_DUMMY7	0
bit 1	OP_WEST_EU	0
bit 0 (lsb)	OP_MULTI_STANDARD_EUR	0
	Total DEC Value	16
	Total HEX Value	10

Table 9-1 Models and picture quality

Model	Picture quality
42PF7320/28	Pixel Plus
N.a.	Digital Crystal Clear
N.a.	Crystal Clear

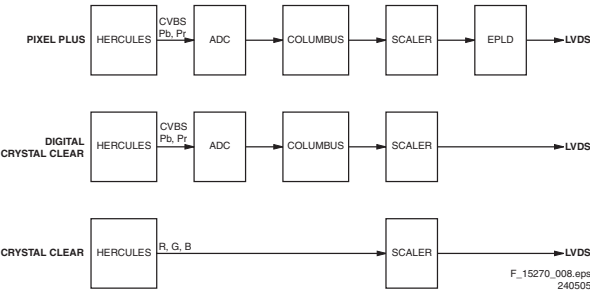


Figure 9-2 Block diagram of the internal building blocks

The Genesis GM1501 Malibu Scaler IC can receive two video input signals: SDTV (directly from Hercules or via Columbus), DVI (from an external DVI source), or PC (from external computer). After the video processing, the digital data is sent via a Low Voltage Differential Signalling bus to the LCD panel. LVDS is used to improve data speed and to reduce EMI significantly. There are two I²C lines and two interrupt and communication lines (TV_IRQ and TV_SC_COM) for the Scaler control. The Scaler communicates with the Hercules as a slave device. To avoid buffer overflow at the Scaler side, the TV_SC_COM line provides the necessary hardware flow control. To allow bi-directional communication, the Scaler can initiate a service interrupt-request to the Hercules via the TV_IRQ line.

The Hercules, and EEPROM are supplied with 3.3 V, which is also present during STANDBY. The EEPROM, or NVM (Non Volatile Memory) is used to store the settings.

The sound part is built up around the Hercules. The Source Selection, Decoding and Processing are all done by the Hercules.

Power supply input are several DC voltages coming from a supply panel.

9.3 Input/Output

The I/O is divided over two parts: Rear I/O and Side I/O. The rear has two AV inputs with CVBS, Y/C and YUV, a PC (VGA) input, and an HDMI input. The side has a CVBS and Y/C (SVHS) input. The selection of the external I/O's is controlled by the Hercules.

AV1 / CVI-1: The input of AV1 / CVI-1 is CVBS + YUV + L/R.
AV2: The input of AV2 is Y/C + CVBS + L/R.

PC-VGA/CVI-2: This input is directly going to the Scaler IC. See paragraph "Video: Scaler Part".

HDMI in / PC-D: This input is directly going to the Scaler IC. See paragraph "Video: Scaler Part".

9.4 Tuner and IF

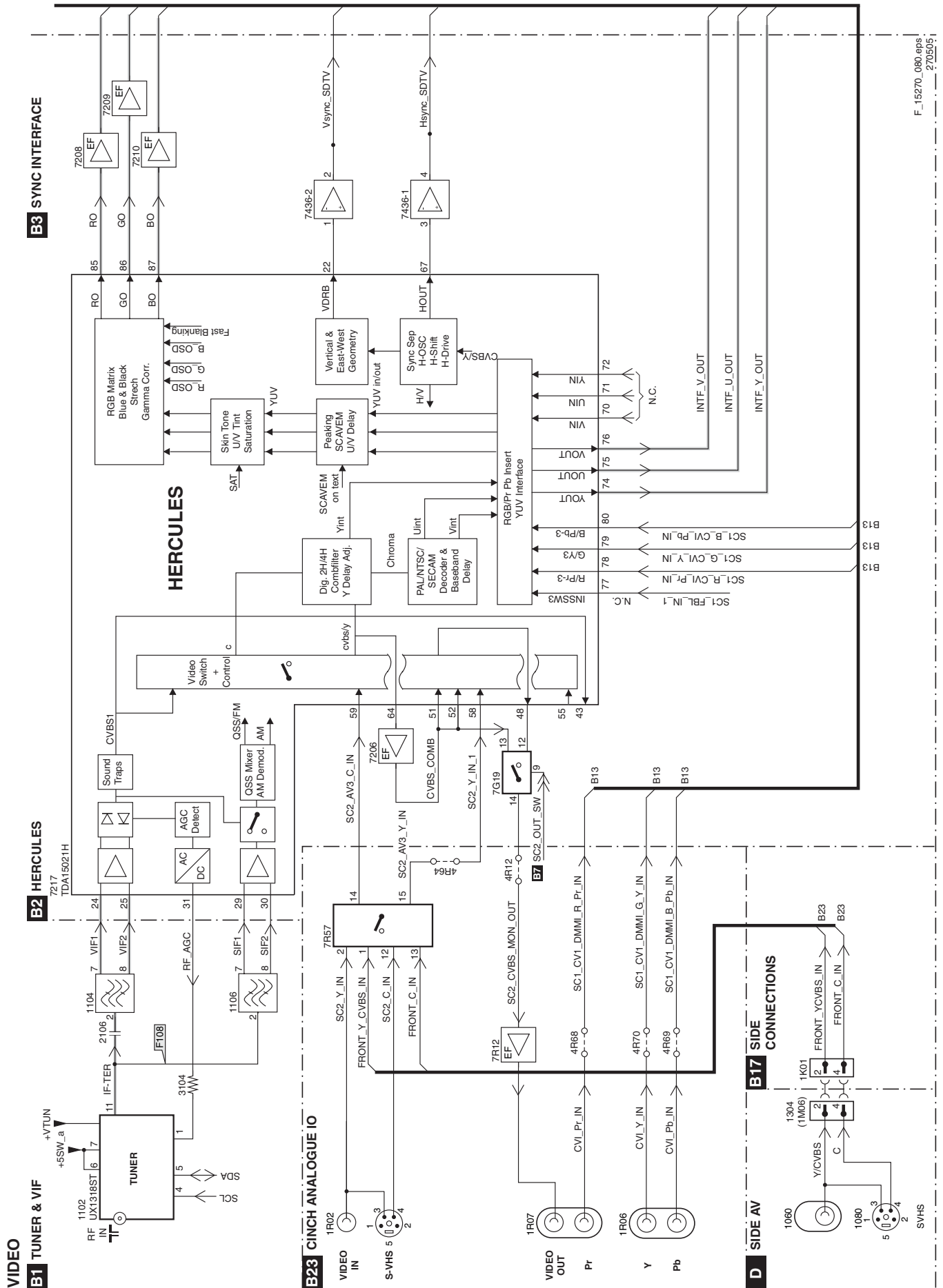
A Philips UV1316E/1318SD/TEDE9 Tuner is used in the TV board. The SIF signals are decoded by the Hercules. Tuning is done via I²C.

9.4.1 Video IF Amplifier

The IF-filter is integrated in a SAW (Surface Acoustic Wave) filter. One for filtering IF-video (1104, in some models: 1105) and one for IF-audio (1106). The type of these filters depends on the standard(s) that has/have to be received.

The output of the tuner is controlled via an IF-amplifier with AGC-control. This is a voltage feedback from pin 31 of the Hercules to pin 1 of the tuner. The AGC-detector operates on top sync and top white level. AGC take-over point is adjusted via the service alignment mode 'Tuner' - 'AGC'. If there is too much noise in the picture, then it could be that the AGC setting is wrong. The AGC-setting could also be mis-aligned if the picture deforms with perfect signal; the IF-amplifier amplifies too much.

9.5 Video: TV Part (Diagrams B1, B2, and B3)



The video processing is completely handled by the Hercules

- IF demodulator.
- Chrominance decoder
- Sync separator.
- Horizontal & vertical drive.
- RGB processing.
- CVBS and SVHS source select.

It has also built-in features like:

- CTI.
- Black stretch.
- Blue stretch.
- White stretch.
- Slow start up.
- Dynamic skin tone correction etc.

Further, it also incorporates sound IF traps and filters, and requires only one crystal for all systems.

9.6 Columbus

9.6.1 Introduction

The Columbus is a combination of:

- A **2D/3D Comb filter** for both PAL and NTSC, and
- A **spatial/temporal noise reduction system** for both colour and luminance signals.

The Columbus 3D Comb filter uses digitised CVBS, U, and V (or C) signals and can be used with or without an external 16 Mbit SDRAM. Without external 16Mbit SDRAM, 3D comb filtering and temporal noise reduction are not possible.

The noise reduction part of the Columbus is controlled by the FBX software using the SNERT interface. The 2D/3D Comb filter part is controlled by the Main software using the I²C bus.

9.6.2 2D/3D Comb Filter

Introduction

The “3D Comb filter Columbus” is a combined 2D/3D Comb filter function that is part of the Columbus chip (circuit diagram B19, item 7M00). It is a comb filter for both PAL and NTSC.

The 3D Comb filter is used to separate chroma and luminance components out of a CVBS signal. It is of no use when the CVBS signal is a SECAM signal (SECAM signals cannot be combed) The Columbus chip can be used with or without 16 Mbit external SDRAM (circuit diagram B10, item 7B01). When an external SDRAM is connected to the IC, the Comb filter function can work in combined 2D/3D processing (depending on the detected pixel based motion). When no external SDRAM is connected, only 2D Comb filtering is possible.

The Columbus can comb the following standard signals:

- PAL B, PAL G, PAL H, PAL I, PAL D, PAL K: Colour standard PAL, Colour carrier at 4.43 MHz, field frequency: 50 Hz
- PAL M: Colour standard PAL, Colour carrier at 3.58 MHz, field frequency: 60 Hz
- PAL N: Colour standard PAL, Colour carrier at 3.58 MHz, field frequency: 50 Hz
- NTSC M: Colour standard NTSC, Colour carrier at 3.58 MHz, field frequency: 60 Hz

For NTSC signals, the PAL delay line must always be bypassed.

The following signals CANNOT be combed:

- Double Window signals or Multi PIP. For these signals, only one part or even no part of the signal is in relation with the burst. The part that is not in relation with the burst can become very blurred when combed by the Columbus

Comb filter. Such a signal must be bypassed. Notch mode is not even an option since e.g. in double window, one part can be a PAL signal while the other part is NTSC or SECAM.

- In cases where a SECAM signal is presented to the Columbus Comb filter; both the luminance and UV path must be bypassed. The PAL delay line inside the Columbus cannot be used for SECAM signals so it must also be bypassed. The luminance path must have luminance at its input instead of CVBS. A chroma delay line outside Columbus must be used for SECAM signals. Reason for this: the Columbus PAL delay line halves the output of the chroma signals in case of SECAM.
- Y/C, YPbPr, and RGB signals do not have to be combed. So both the luminance and UV path must be bypassed. The PAL delay line will also be bypassed.
- In cases where the Columbus Comb filter does not receive a CVBS signal with burst at the right place according to the standard (this includes black and white signals without burst), phase correction results become unpredictable and the Comb filter must be set in bypass (= luminance path bypassed, UV path bypassed, PAL delay line bypassed)
- VCR signals cannot be combed and must be processed in notch mode, or bypassed.

Columbus Modes

The several modes of the Columbus 3D Comb filter are:

- Bypass mode.
- Band-Pass-Notch mode.
- 2D Comb filter modes.
 - Simple median.
 - Median.
- Field Comb filter mode.
- Frame Comb filter mode.

Bypass Mode

The 3D Comb filter can be set in bypass mode. In this mode, the CVBS, U and V signals are just bypassed to the output.

Band-Pass-Notch Mode

This is a mode where no Comb filtering is applied. A “Band Pass Filter” is used to filter the chroma information out of the CVBS signal. A “Notch Filter” is used to subtract the sub carrier out of the CVBS in order to make a luminance signal without chroma sub carrier.

In terms of cross colour and cross luminance, this mode has the worst performance of all. It is only used on these signals where no comb filtering can be applied (non-standard signals and most VCR signals for example).

2D Comb Filter Modes

A Comb filter does an action on a current pixel and a delayed pixel. When the delayed pixel is a line-delayed pixel, we talk about a “Spatial or 2D Comb Filter” (for NTSC the delay must be 1 line, for PAL it must be 2 lines).

Spatial or 2D Comb filters show problems on vertical colour transients and on single coloured lines. For these situations, extra hardware is added in the Columbus chip to avoid these kinds of problems. However even with these extra measures, there are still situations where the 2D Comb filter does not perform optimally (diagonal resolution and single lines with equal luminance content). In order to restrict the working area of the 2D Comb filter to the frequencies where the sub carrier is present, a horizontal band pass filter always precedes a 2D Comb filter.

When a 2D Comb filter has no extra hardware to avoid problems at vertical colour transients (or this extra hardware is switched “off”), the Comb filter is called a “simple median filter”. When there is extra hardware to avoid these kinds of problems, the filter is called a “median filter”.

Field Comb Filter Mode

A Comb filter does an action on a current pixel and a delayed pixel. When the delayed pixel is a field-delayed pixel, we talk

about a “Field Comb Filter”. Field Comb filters are only for PAL of commercial interest.

Field Comb filters show also problems on vertical colour transients and on motion. For the vertical transients, a hanging dots detector has been added, however the performance on vertical transients of the field Comb filter, even with this hanging dots detector, is worse than the performance of the 2D Comb filter. On motion, the field Comb filter performs very badly. A motion detector must detect the pixels where there is motion and on these pixels, the Comb filter must be forced back to 2D Comb filter mode. This switching back is not implemented with a hard switch, but with a motion controlled fader. When there is a lot of motion, the fader will take a lot of the 2D Comb filter output, when there is less motion, more field-combed signal will be taken.

A field Comb filter is also called a “vertical-temporal filter” because it filters in the vertical and temporal direction.

Frame Comb Filter Mode

A Comb filter does an action on a current pixel and a delayed pixel. When the delay is a frame, we talk about a “Frame Comb Filter”. For NTSC we need a delay of one frame, for PAL however the delay must be two frames.

Frame Comb filters have the best performance, but just like the Field Comb filter, they perform very badly on motion. A motion detector will have to detect motion and on these motion pixels, 2D Comb filtering will have to be applied. A frame Comb filter is a pure “temporal filter”.

The Columbus needs an external memory connected to it, before it can do a temporal or vertical-temporal Comb filter action. When no external memory is connected, field or frame Comb filtering is impossible.

Block Diagram

In the next block diagram, two main parts of the Columbus 2D/3D Comb filter can be seen:

- The upper part is what is called the luminance Comb filter. It tries to make an as clean as possible luminance signal out of the CVBS signal at the input.
- The lower part receives U and V signals (sequentially) that are normally only band pass filtered in front of the 3D Comb filter. It filters all left over luminance signals out of it, in order to make an as clean as possible U and V signal.

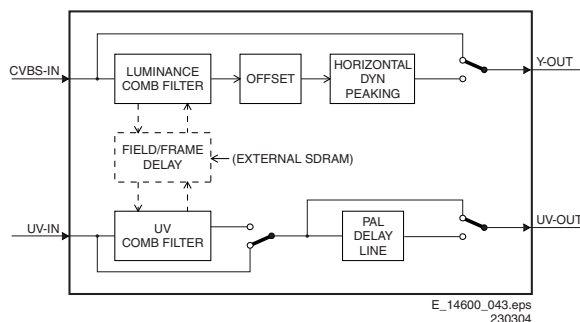


Figure 9-4 Columbus 2D/3D Comb Filter block diagram

The Comb filter has two inputs. One is the CVBS where clean luminance (Y) will be extracted from; the other one is UV where a clean U and V signal will be extracted. Both input signals are **digital** signals.

The field or frame delay is used for the Field and Frame Comb filter mode. An external memory connected to the Columbus IC provides this delay.

Phase correction is done at the inputs of both the Comb filter blocks. There is a phase correction for spatial filtering (called the spatial phase corrector) and a separate phase correction on the signals used for temporal (Frame or Field) Comb filtering (called the temporal phase corrector).

The offset block receives the motion dependant 2D/3D Comb filtered signal as input. The black level of the luminance signal is restored and the result is output. The black level restoration is corrected continuously. However, on VCR signals, this restoration can become unstable. Therefore, on VCR signals, a fixed black level restoration value must be forced.

A horizontal dynamic peaking can be done on the luminance signal. This peaking is adaptive in order not to amplify any cross luminance distortion. It detects where there could be left over sub carrier in the luminance signal and reduces the peaking over there. The detection of the left over cross luminance is different depending on the pre-filter or post-filter mode.

The amount of peaking and coring can be chosen. The peaking algorithm behind it is a simplified copy of the luminance peaking of picnic. After the peaking block, the signal is output as clean luminance.

The bypass switches have the obvious purpose of bypassing the input signal, in case no Comb filtering is wanted.

A PAL delay line is added in the UV path. This is done because a delay line in front of the 3D Comb filter does need an extra vertical filter action on the UV signals. This vertical filtering deteriorates the vertical transient performance for colours. The Columbus Comb filter cannot undo this. However, this reduction in performance can be omitted by putting the PAL delay line after the 3D Comb filter block.

For PAL signals, the PAL delay line in front of the Columbus 3D Comb filter is bypassed and the Columbus delay line is switched “on”. In cases where the delay line in front of Columbus cannot be bypassed, the Columbus PAL delay line is bypassed.

For NTSC signals, the PAL delay line is bypassed as usual.

9.6.3 Noise Reduction and Noise Estimator

The noise reduction function is a sophisticated successor of the noise reduction module from the PICNIC-chip, also known as "LIMERIC".

Besides the noise reduction part, the Columbus noise reduction module also comprises a noise estimator. This noise estimator (the LORE-noise estimator) is a new design with the ambition of more accuracy and with less control complexity than the existing noise estimators.

9.7 Video: Scaler Part (Diagram B7, B8 and B9)

The Genesis gm1501 Scaler is a dual channel graphics and video processing IC for LCD and plasma monitors and televisions incorporating Picture in Picture, up to SXGA output resolutions. The Scaler controls the display processing in an LCD or plasma TV, e.g. like the deflection circuit in a CRT-based TV. It controls all the view modes (e.g. like "zooming" and "shifting"). Features like PC (VGA) or HD inputs, are also handled by this part.

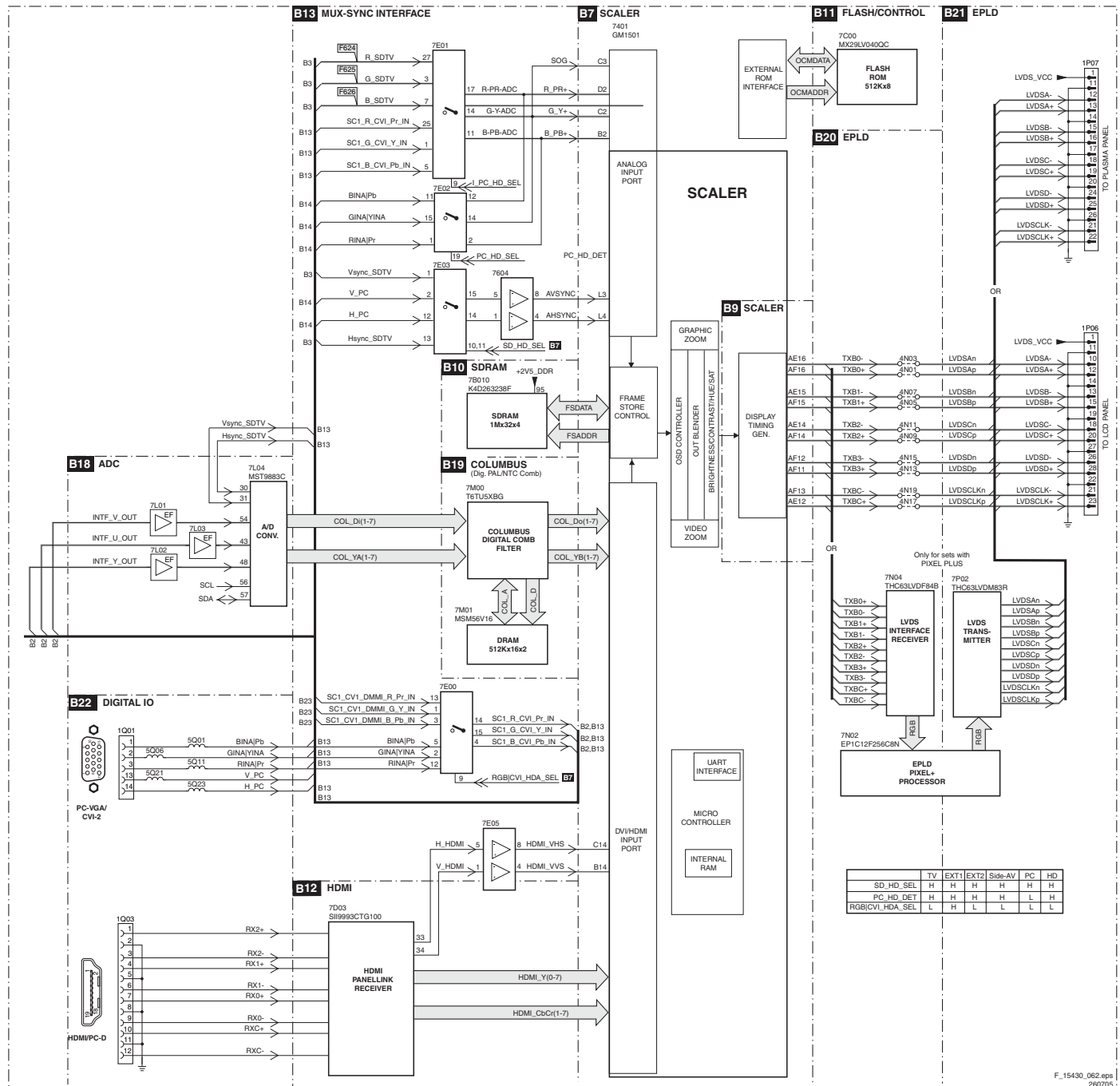


Figure 9-5 Block diagram scaler part

9.7.1 Teletext Path

In Pixel Plus and Digital Crystal Clear models, which have an ADC (B18) and Columbus 3D combfilter (B19), the digital input of the scaler is used for the digital video signal (Columbus output), whereas the analogue RGB input of the scaler is used for teletext. This means that no mixed mode (video plus teletext simultaneously) is possible. In Crystal Clear models, which do not have an ADC and Columbus, the analogue RGB input of scaler is used for both video and teletext (generated by the Hercules). The digital input of the Scaler is not used in Crystal Clear TV sets. See also the block diagrams at the beginning of this chapter. When fault finding, checking the teletext path may be useful: if there is sound and teletext, but no video and user menu (blank screen), the digital path (Hercules - ADC - Columbus - Scaler) is faulty. If there is sound but no teletext, the back-end part (Scaler - LCD panel) is faulty.

9.7.2 Features

The Scaler provides several key IC functions:

- Scaling.
- Auto-configuration/ Auto-Detection.
- Various Input Ports:
 - Analog RGB.
 - Video Graphics.
- Integrated LVDS Transmitter.
- On-chip Micro-controller

9.7.3 Inputs

Analog RGB

The RGB input is fed to pins B2, C2 and D2 of the Scaler IC (Genesis GM1501, item 7801, see circuit diagram B8). This input consists of either the Hercules RGB output or the RGB/YpbPr input of the VGA connector. The Scaler can switch between the two signals via the PC_HD_SEL signal and selection IC SM5301 (see circuit diagram B13).

PC (VGA) Input

The VGA input is processed by the VGA block of the Scaler. The Scaler supports pixel frequencies up to 165MHz. YpbPr format is also supported via the VGA interface and covers a resolution of 480p/560p/720p/1080i.

9.7.4 Output

The Display Output Port provides data and control signals that permit the Scaler to connect to a variety of display devices using a TTL or LVDS interface. The output interface is configurable for single or dual wide TTL/LVDS in 18, 24 or 30-bit RGB pixels format. All display data and timing signals are synchronous with the DCLK output clock. The integrated LVDS transmitter is programmable to allow the data and control signals to be mapped into any sequence depending on the specified receiver format.

9.8 Audio Processing

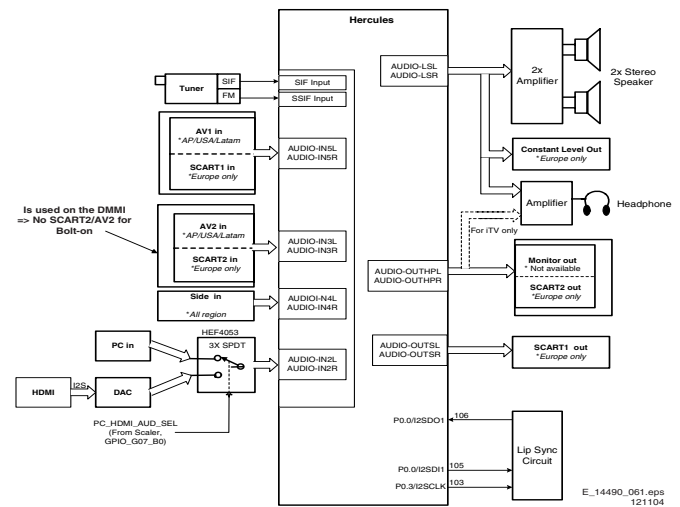


Figure 9-6 Block diagram audio processing

The audio decoding is done entirely via the Hercules. The IF output from the Tuner is fed directly to either the Video-IF or the Sound-IF input depending on the type of concept chosen. There are mainly two types of decoder in the Hercules, an analogue decoder that decodes only Mono, regardless of any standards, and a digital decoder (or DEMDEC) that can decode both Mono as well as Stereo, again regardless of any standards.

In this chassis, the analogue decoder is used in two cases:

- It is used for AM Sound demodulation in the Europe SECAM LL' transmission.
- It is used for all FM demodulation in AV-Stereo sets.

9.8.1 Diversity

The diversity for the Audio decoding can be broken up into two main concepts:

- The Quasi Split Sound concept used in Europe and some AP sets.
- The Inter Carrier concept, used in NAFTA and LATAM.

The UOC-III family makes no difference anymore between QSS- and Intercarrier IF, nearly all types are software-switchable between the two SAW-filter constructions.

Simple data settings are required for the set to determine whether it is using the Inter Carrier or the QSS concept. These settings are done via the "QSS" and "FMI" bit found in SAM mode. Due to the diversity involved, the data for the 2 bits are placed in the NVM location and it is required to write once during start-up.

On top of that, it can be further broken down into various systems depending on the region. The systems or region chosen, will in turn affect the type of sound standard that is/are allowed to be decoded.

- For the case of Europe, the standard consists of BG/DK/LL' for a Multi-System set. There are also versions of Eastern Europe and Western Europe set and the standard for decoding will be BG/DK and I/DK respectively. FM Radio (not applicable for the models discussed in this manual) is a feature diversity for some Europe TV sets. The same version can have either FM Radio or not, independent of the system (e.g. sets with BG/DK/LL' can have or not have FM radio).
- For the case of NAFTA and LATAM, there is only one transmission standard, which is the M standard. The diversity then will be based on whether it has a dBx noise reduction or a Non-dBx (no dBx noise reduction).

- For the case of AP, the standard consists of BG/DK/I/M for a Multi-System set. The diversity here will then depend on the region. AP China can have a Multi-System and I/DK version. For India, it might only be BG standard.

9.8.2 **Functionality**

The features available in the Hercules are as follows:

- Treble and Bass Control.
- Surround Sound Effect that includes:
 - Incredible Stereo.
 - Incredible Mono.
 - 3D Sound (not for AV Stereo).
 - TruSurround (not for AV Stereo).
 - Virtual Dolby Surround, VDS422 (not for AV Stereo).
 - Virtual Dolby Surround, VDS423 (not for AV Stereo).
 - Dolby Pro-Logic (not for AV Stereo).
- Bass Feature that includes:
 - Dynamic Ultra-Bass.
 - Dynamic Bass Enhancement.
 - BBE (not for AV Stereo).
- Auto-Volume Leveller.
- 5 Band Equalizer.
- Loudness Control.

All the features stated are available for the Full Stereo versions and limited features for the AV Stereo

9.8.3 **Audio Amplifier**

The audio amplifier part is very straightforward. It uses two integrated TDA8931T power amplifiers for the L and R channels; each amplifier IC is able to deliver a maximum output of 20 W_{RMS} continuously in a 4-6 ohm speaker without needing a heatsink.

The operating supply for the amplifier may range from 12 V to 32 V; in the LC04x TV set, depending on the model, supply voltages of 18 V (for the 5 W / 8 ohm version) or 24 V (for the 15 W / 4 ohm version) are used.

Muting is done via the SOUND_ENABLE line connected to pins 7 of both amplifier-ICs, which comes from the Hercules.

9.8.4 **Audio: Lip Sync**

No Lip Sync adjustments are necessary in this model.

9.9 **Control**

9.9.1 **Hercules**

The System Board has two main micro-controllers on board. These are:

- On-chip x86 micro-controller (OCM) from Genesis LCD or plasma TV/Monitor Controller.
- On-chip 80C51 micro-controller from Philips Semiconductor UOCIII (Hercules) series.

Each micro-controller has its own I²C bus which hosts its own internal devices.

The Hercules is integrated with the Video and Audio Processor. For dynamic data storage, such as SMART PICTURE and SMART SOUND settings, an external NVM IC is being used. Another feature includes an optional Teletext/Closed Caption decoder with the possibility of different page storage depending on the Hercules type number.

9.9.2 **Block Diagram**

The block diagram of the Micro Controller application is shown below.

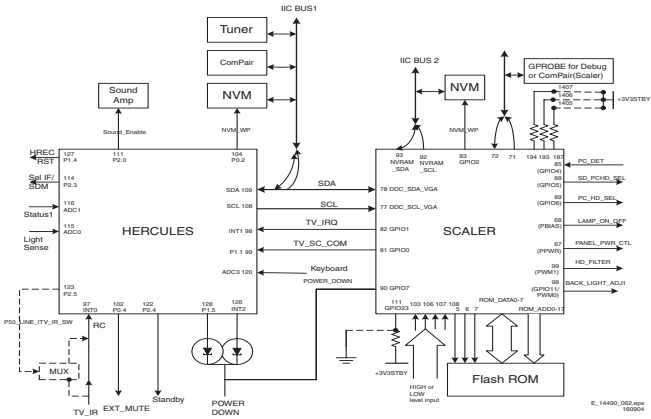


Figure 9-7 Micro Controller block diagram

9.9.3 **Basic Specification**

The Micro Controller operates at the following supply voltages:

- +3.3 V_{DC} at pins 4, 88, 94, and 109.
- +1.8 V_{DC} at pins 93, 96, and 117.
- I²C pull up supply: +3.3V_{DC}.

9.9.4 **Pin Configuration and Functionality**

The ports of the Micro Controller can be configured as follows:

- A normal input port.
- An input ADC port.
- An output Open Drain port.
- An output Push-Pull port.
- An output PWM port.
- Input/Output Port

The following table shows the ports used for the LC04 control:

Table 9-2 Micro Controller ports overview

Pin	Name	Description	Configuration
97	INT0/ P0.5	IR	INT0
98	P1.0/ INT1	TV_IRQ	INT2
99	P1.1/ T0	TV_SC_COM	P1.1
102	P0.4/ I2SWS	EXT_MUTE	P0.4
103	P0.3/ I2SCLK	Lip Sync	I2SCLK
104	P0.2/ I2SDO2	NVM_WP	P0.2
105	P0.1/ I2SDO1	Lip Sync	I2SDO1
106	P0.0/ I2SDI/O	Lip Sync	I2SDI/O
107	P1.3/ T1	PC-TV_LED	P1.3
108	P1.6/ SCL	SCL	SCL
109	P1.7/ SDA	SDA	SDA
111	P2.0/ TPWM	SOUND_ENABLE	P2.0
112	P2.1/ PWM0	(for future use)	-
113	P2.2/ PWM1	(for future use)	-
114	P2.3/ PWM2	SEL_IF	P2.3
115	P3.0/ ADC0	Light Sensor - SDM	ADC0
116	P3.1/ ADC1	STATUS_1	ADC1
119	P3.2/ ADC2	STATUS_2	ADC2
120	P3.3/ ADC3	KEYBOARD	ADC3
122	P2.4/ PWM3	STANDBY	P2.4
123	P2.5/ PWM4	(for future use)	-
126	P1.2/ INT2	(for future use)	-
127	P1.4/ RX	HERC_RESET	-
128	P1.5/ TX	POWER_DOWN	P1.5

The description of each functional pin is explained below:

- **LED.** This signal is used as an indication for the Standby, Remote and Error Indicator. Region diversity:
 - During protection mode, the LED blinks and the set is in standby mode.
 - During error conditions it blinks at a predefined rate.
 - After receiving a valid RC-5 or local keyboard command it flashes once.
 - For sets with error message indication, the LED blinks when message is active and the set is in standby mode.
- **SCL.** This is the clock wire of the two-wire single master bi-directional I²C bus.
- **SDA.** This is the data wire of the two-wire single master bi-directional I²C bus.
- **STANDBY.** The Hercules generates this signal. This can enable the power supply in normal operation and disable it during Standby. It is of logic "high" (3.3 V) under normal operation and "low" (0 V) during Standby.
- **IR.** This input pin is connected to an RC5 remote control receiver.
- **SEL-IF.** This is an output pin to switch the Video SAW filter between M system and other systems.
 - 0: NTSC M (default)
 - 1: PAL B/G, DK, I, L
- **NVM_WP.** The global protection line is used to enable and disable write protection to the NVM. When write to the NVM is required, pin 7 of the NVM must be pulled to logic '0' first (via Write_Protect of the micro-controller pin) before a write is performed. Otherwise pin 7 of NVM must always be at logic "1"
 - 0: Disabled
 - 1: Enabled (default)
- **SOUND_ENABLE.** This pin is used to MUTE the audio amplifier. It is configured as push pull.
- **STATUS_1.** This signal is used to read the status of the SCART 1 input.
- **STATUS_2.** This signal is used to read the status of the SCART 2 input.
- **HERC_RESET.** This pin is used to switch the +1.8V supply.
- **POWER_DOWN.** The power supply generates this signal. Logic "high" (3.3 V) under normal operation of the TV and goes "low" (0 V) when the Mains input voltage supply goes below 70 V_{AC}.
- **KEYBOARD.** Following are the Keyboard functions and the step values (8 bit) for it.

Table 9-3 Local keyboard values

Function	Voltage (V _{DC})	Step values (8 bit)
NAFTA Standby	0	0 - 6
Ch +	0.43	7 - 33
Exit Factory (Ch- and Vol-)	0.69	34 - 53
Ch -	0.93	54 - 73
Menu (Vol - and Vol +)	1.19	74 - 96
Vol -	1.49	97 - 121
DVD Eject (not applicable)	1.8	122 - 147
Vol +	2.12	148 - 169

- **TV_IRQ.** This signal is the interrupt from the Scaler IC.
- **TV_SC_COM.** This signal is used for the communication with the Scaler IC.
- **EXT_MUTE.** This signal is used to reduce the Switch-off plop.

9.10 Abbreviation List

0/6/12	SCART switch control signal on A/V board. 0 = loop through (AUX to TV), 6 = play 16:9 format, 12 = play 4:3 format
1080i	1080 visible lines, interlaced
1080p	1080 visible lines, progressive scan
2CS	2 Carrier Sound (or 2 Channel Stereo)
480i	480 visible lines, interlaced
480p	480 visible lines, progressive scan
ACI	Automatic Channel Installation: algorithm that installs TV channels directly from a cable network by means of a predefined TXT page
ADC	Analogue to Digital Converter
AFC	Automatic Frequency Control; Control signal used to tune and lock to the correct frequency
AGC	Automatic gain control (feedback) signal to the tuner. This circuit ensures a constant output amplitude regardless of the input amplitude
AM	Amplitude Modulation; A "data encoding to a carrier" method, such that the carrier amplitude is proportional to the data value
AP or A/P	Asia Pacific
AR	Aspect Ratio: 4 by 3 or 16 by 9
ASD	Automatic Standard Detection
AV	External Audio Video
B-SC1-IN	Blue SCART1/EXT1 in
B-SC2-IN	Blue SCART2/EXT2 in
B-TXT	Blue TeleteXT
B/G	Monochrome TV system. Sound carrier distance is 5.5 MHz. B= VHF-band, G= UHF-band
BOCMA	Bimos one Chip Mid-end Architecture: video and chroma decoder
C-FRONT	Chrominance front input
CBA	Circuit Board Assembly (also called PCB or PWB)
CL	Constant Level: audio output to connect with an external amplifier
CLUT	Colour Look-Up Table
COLUMBUS	COLOUR LUMInance Baseband Universal Subsystem. IC performing noise reduction and 2D/3D comb filtering
ComPair	Computer aided rePair. A tool for diagnosing a TV through a PC controlled interface
CSM	Customer Service Mode
CVBS	Composite Video and Blanking Signal; A single video signal that contains luminance, colour, and timing information
CVBS-EXT	CVBS signal from external source (VCR, VCD, etc.)
CVBS-INT	CVBS signal from internal Tuner
CVBS-MON	CVBS monitor signal
CVBS-TER-OUT	CVBS TERrestrial OUTput signal
DAC	Digital to Analogue Converter
DBE	Dynamic Bass Enhancement: extra low frequency amplification
DFU	Directions For Use: Owner's manual
DNR	Dynamic Noise Reduction / Digital Noise Reduction; Noise reduction feature of the set
DRAM	Dynamic RAM; dynamically refreshed RAM
DSP	Digital Signal Processing
DST	Dealer Service Tool; Special remote control designed for dealers to enter

	e.g. service mode (a DST-emulator is available in ComPair)	L/L'	Monochrome TV system. Sound carrier distance is 6.5 MHz. 'L' is Band I, L is all bands except for Band I
DTS	Digital Theatre System; A multi-channel surround sound format, similar to Dolby Digital	LS	LoudSpeaker
DVD	Digital Versatile Disc	LVDS	Low Voltage Differential Signalling, data transmission system for high speed and low EMI communication.
EEPROM	Electrically Erasable and Programmable Read Only Memory	M/N	Monochrome TV system. Sound carrier distance is 4.5 MHz. M= 525 lines @ 60 Hz, N= 625 lines @ 50 Hz
EPLD	Erasable Programmable Logic Device	MOSFET	Metal Oxide Semiconductor Field Effect Transistor
EPG	Electronic Program Guide: system used by broadcasters to transmit TV guide information (= NextTVView)	MPEG	Motion Pictures Experts Group. An ISO/IEC body that has given its name to an image compressing scheme for moving video
EU	Europe	MSP	Multi-standard Sound Processor: ITT sound decoder
EXT	EXTernal (source), entering the set by SCART or by cinches (jacks)	MUTE	MUTE Line
FBL	Fast BLanking; DC signal accompanying RGB signals. To blank the video signal when it is returning from the right side of the screen to the left side. The video level is brought down below the black video level	NC	Not Connected
FBL-SC1-IN	Fast blanking signal for SCART1 in	NICAM	Near Instantaneously Companded Audio Multiplexing; This is a digital sound system, mainly used in Europe
FBL-SC2-IN	Fast blanking signal for SCART2 in	NTSC	National Television Standard Committee. Colour system used mainly in North America and Japan. Colour carrier NTSC M/N = 3.579545 MHz, NTSC 4.43 = 4.433619 MHz (this is a VCR norm, it is not transmitted off-air)
FBL-TXT	Fast Blanking Teletext		
FM	Field Memory; A memory chip that is capable of storing one or more TV picture fields / Frequency Modulation; A technique that sends data as frequency variations of a carrier signal	NVM	Non Volatile Memory; IC containing data such as alignment values, preset stations
FMR	Radio receiver that can receive the FM Band 87.5 - 108 MHz	O/C	Open Circuit
FRC	Frame Rate Converter	ON/OFF LED	On/Off control signal for the LED
FRONT-C	Front input chrominance (SVHS)	OSD	On Screen Display
FRONT-DETECT	Control line for detection of headphone insertion, Service Mode jumper, power failure detection	PAL	Phase Alternating Line. Colour system used mainly in Western Europe (colour carrier = 4.433619 MHz) and South America (colour carrier PAL M = 3.575612 MHz and PAL N = 3.582056 MHz)
FRONT-Y_CVBS	Front input luminance or CVBS (SVHS)	PC	Personal Computer
G-SC1-IN	Green SCART1/EXT1 in	PCB	Printed Circuit Board (or PWB)
G-SC2-IN	Green SCART2/EXT2 in	PIG	Picture In Graphic
G-TXT	Green teletext	PIP	Picture In Picture
H	H_sync to the module	PLL	Phase Locked Loop. Used, for example, in FST tuning systems. The customer can directly provide the desired frequency
HA	Horizontal Acquisition; horizontal sync pulse	Progressive Scan	Scan mode where all scan lines are displayed in one frame at the same time, creating a double vertical resolution.
HD	High Definition	PWB	Printed Wiring Board (also called PCB or CBA)
HP	HeadPhone	RAM	Random Access Memory
I	Monochrome TV system. Sound carrier distance is 6.0 MHz. VHF- and UHF-band	RC	Remote Control transmitter
I ² C	Integrated IC bus	RC5 or 6	Remote Control system 5 or 6, the signal from the remote control receiver
I ² S	Integrated IC Sound bus	RGB	Red, Green, and Blue colour space; The primary colour signals for TV. By mixing levels of R, G, and B, all colours (Y/C) are reproduced
IC	Integrated Circuit	RGBHV	Red, Green, Blue, Horizontal sync, and Vertical sync
IF	Intermediate Frequency	ROM	Read Only Memory
Interlaced	Scan mode where two fields are used to form one frame. Each field contains half the number of the total amount of lines. The fields are written in "pairs", causing line flicker.	SAM	Service Alignment Mode
IR	Infra Red	SC	SandCastle: two-level pulse derived from sync signals
IRQ	Interrupt ReQuest	SC-IN	SCART in
Last Status	The settings last chosen by the customer and read and stored in RAM or in the NVM. They are called at start-up of the set to configure it according to the customer's preferences	SC-OUT	SCART out
LATAM	LATIn America	S/C	Short Circuit
LC04	Philips chassis name for LCD TV 2004 project	SCART	Syndicat des Constructeurs d'Appareils Radiorécepteurs et
LCD	Liquid Crystal Display		
LED	Light Emitting Diode; A semiconductor diode that emits light when a current is passed through it		
LINE-DRIVE	Horizontal (line) deflection drive signal (for the Line transistor)		

	Téléviseurs; This is a 21-pin connector used in EU, that carries various audio, video, and control signals (it is also called Péritel connector)
SCL	Serial CLock Signal on I ² C bus
SD	Standard Definition
SDA	Serial Data Signal on I ² C bus
SDRAM	Synchronous DRAM
SECAM	SÉquence Couleur Avec Mémoire; Colour system mainly used in France and East Europe. The chroma is FM modulated and the R-Y and B-Y signals are transmitted line sequentially. Colour carriers= 4.406250 MHz and 4.250000 MHz
SIF	Sound Intermediate Frequency
SMPS	Switched Mode Power Supply
SND	SouND
SOPS	Self Oscillating Power Supply
S/PDIF	Sony Philips Digital InterFace; This is a consumer interface used to transfer digital audio
SRAM	Static RAM
STBY	STandBY
SVHS	Super Video Home System
SW	Software or Subwoofer or Switch
THD	Total Harmonic Distortion
TXT	Teletext; TXT is a digital addition to analogue TV signals that contain textual and graphical information (25 rows x 40 columns). The information is transmitted within the first 25 lines during the Vertical Blank Interval (VBI)
μP	Microprocessor
VA	Vertical Acquisition
VL	Variable Level out: processed audio output towards external amplifier
VCR	Video Cassette Recorder
VGA	Video Graphics Array; 640x480 (4:3)
WD	Watch Dog
WYSIWYR	What You See Is What You Record: record selection that follows main picture and sound
XTAL	Quartz crystal
Y	Luminance signal
Y/C	Y consists of luminance signal, blanking level and sync; C consists of chroma (colour) signal
YPbPr	This is a scaled version of the YUV colour space. Y= Luminance, Pb/Pr= Colour difference signals B-Y and R-Y, other amplitudes w.r.t. to YUV
YUV	Colour space used by the NTSC and PAL video systems. Y is the luminance and U/V are the colour difference signals

9.11 IC Data Sheets

This section shows the internal block diagrams and pin layouts of ICs that are drawn as "black boxes" in the electrical diagrams (with the exception of "memory" and "logic" ICs).

9.11.1 Diagram B2, Type TDA15021H (IC7217, Hercules)

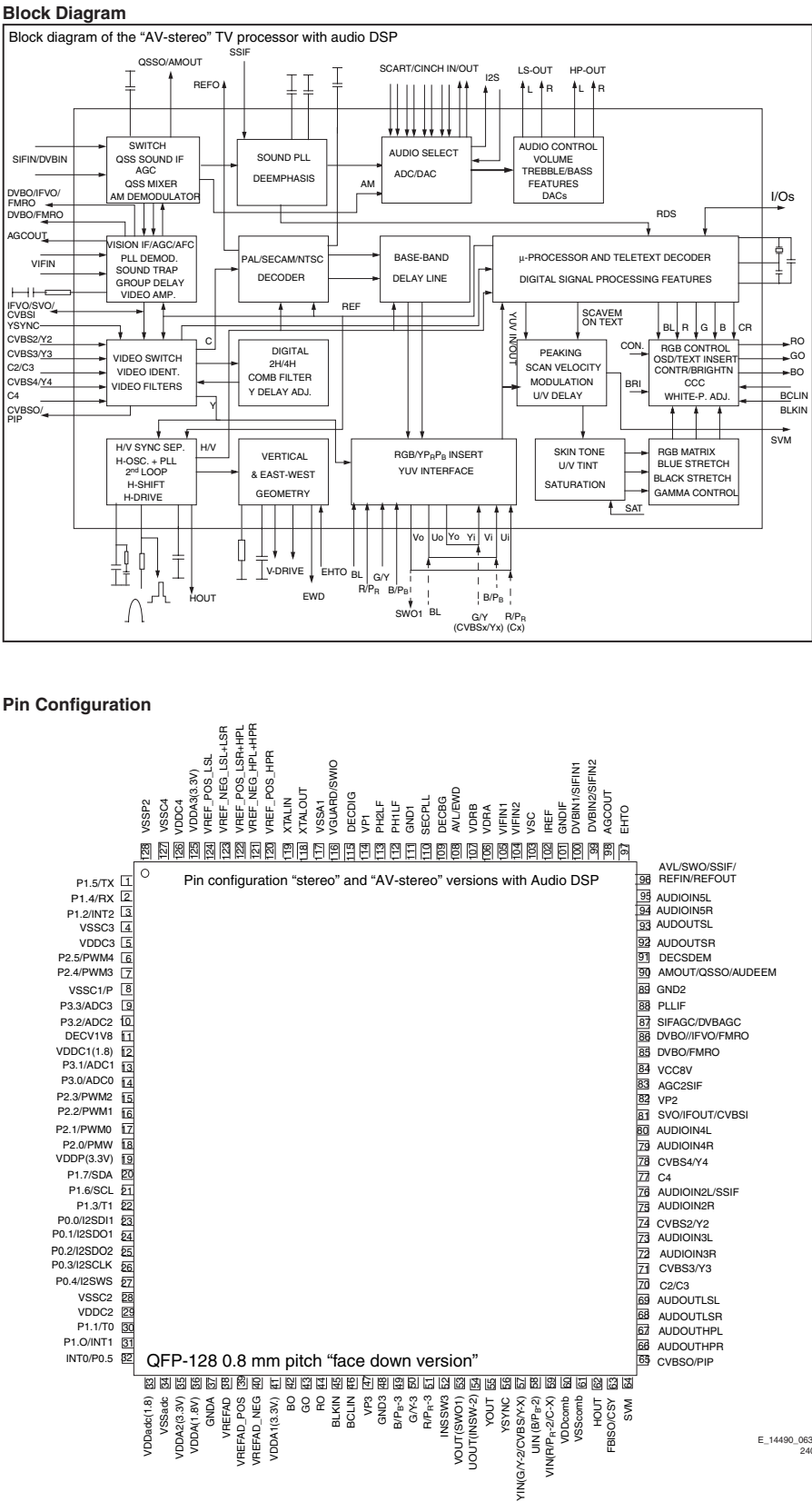


Figure 9-8 Internal block diagram and pin configuration

9.11.2 Diagram B19, Type T6TU5XB (IC7M00, Columbus)

Figure 1 Package outline (top view)

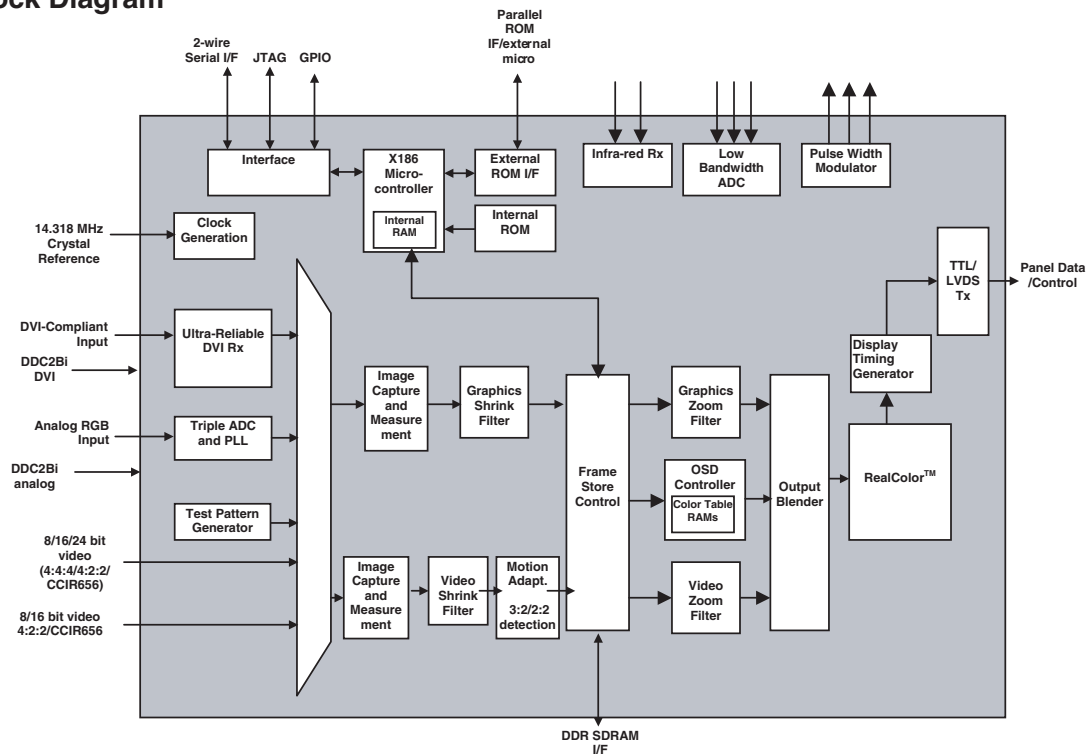
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
A	WEB/ DAVB	UVA0 /Di0	UVA2 /Di2	UVA4 /Di4	UVA6 /Di6	UVA8 /Di8	SEL656	TST1	YA2	YA4	YA6	YA8	VA	HREF	SDA	A
B	YB8	VSS	UVA1 /Di1	UVA3 /Di3	UVA5 /Di5	UVA7 /Di7	YA0 /Di9	BISTEN	YA1	YA3	YA5	YA7	WEA/ DAVA	VSS	SCL	B
C	YB7	YB6	VSS	VDDS	VSS	VSS	VDDC	VDDC	VSS	VSS	VDDC	VDDS	VSS	SNDA	SNRST	C
D	YB5	YB4	VDDC	N.C.	COLUMBUS TOP-VIEW PPA Version 2.7								VSS	SNCL	TCK	D
E	YB3	YB2	VSS	VDDC									TMS	TDO	E	
F	TST2	YB1	VSS	VSS									TRST	TDI	F	
G	CLKASB	YB0 /Do9	VDDS	VDDS									A0ICC	RESET	G	
H	CLKASA	UVB8/ Do8	TST3	VDDC									CLK EXT	CLKSEL	H	
J	UVB7 /Do7	UVB6/ Do6	VSS	VSS									CLK	WEN	J	
K	UVB5 /Do5	UVB4/ Do4	VDDC	VSS									CASN	RASN	K	
L	UVB3 /Do3	UVB2 /Do2	VSS	VDDS									DQM	DQ16	L	
M	UVB1 /Do1	UVB0 /Do0	VDDS	VSS									DQ14	DQ15	M	
N	AVD	N.C.	VDDS	VSS	VSS	VDDC	VSS	VDDS	VDDC	VSS	VDDS	VSS	VSS	VDDS	DQ13	N
P	AVS	VSS	A7	A9	A2	A0	A11	DQ7	DQ6	DQ4	DQ3	DQ1	VDDS	VSS	DQ12	P
R	A4	A5	A6	A8	A3	A1	A10	DQ8	VSS	DQ5	VSS	DQ2	DQ9	DQ10	DQ11	R
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

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200804

Figure 9-9 Pin configuration

9.11.3 Diagram B7+B8+B9, Type GM1501 (IC7401, Genesis)

Block Diagram



Pin Configuration

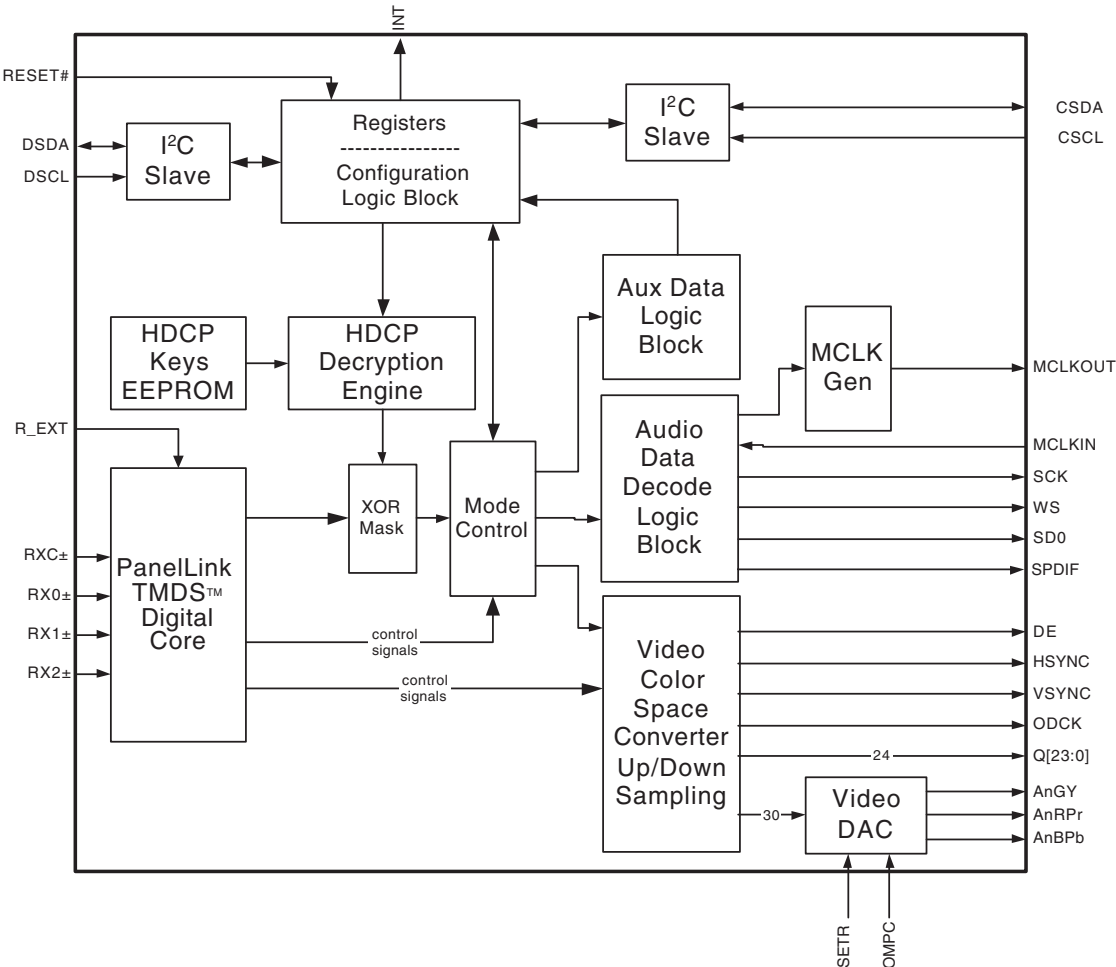
A	NC	ADC_3.3	ADC_1.8	ADC_1.8	ADC_DGND	RXC+	DVI_GND	RX0+	RX1+	RX2+	DVI_GND	LBADC_IN3	D_GND
B	BLUE-	BLUE+	ADC_3.3	ADC_DGND	DVI_GND	RXC-	DVI_GND	RX0-	RX1-	RX2-	REXT	LBADC_IN2	D_GND
C	GREEN-	GREEN+	SOG	ADC_AGND	NC	DVI_3.3	DVI_GND	DVI_3.3	DVI_3.3	DVI_3.3	DVI_3.3	LBADC_IN1	LBADC_33
D	RED-	RED+	ADC_3.3	ADC_AGND	NC	DVI_1.8	DVI_GND	DVI_1.8	DVI_1.8	DVI_1.8	DVI_GND	LBADC_RETURN	LBADC_GND
E	ADC_AGND	ADC_AGND	ADC_3.3	ADC_AGND									
F	NC	VDDD33_PLL	VSSA33_RPLL	VDDA33_RPLL									
G	VDDA33_FPLL	VSSD33_PLL	TCLK	XTAL									
H	VDDD33_SDDS	VSSA33_SDDS	VDDA33_SDDS	VSSA33_FPLL									
J	VDDD33_DDSD	VSSA33_DDSD	VDDA33_DDSD	VSSD33_DDSD									
K	RESETn	ACS_RSET_HD	NC	VSSD33_DDSD						CORE_1.8	CORE_1.8	D_GND	D_GND
L	OCM_INT2	OCM_INT1	AVSYNC	AHSYNC						D_GND	CORE_1.8	D_GND	D_GND
M	OCM_UDO	OCM_UDI	IR0	IR1						D_GND	D_GND	D_GND	D_GND
N	VGA_SDA	VGA_SCL	DVI_SDA	DVI_SCL						D_GND	D_GND	D_GND	D_GND
P	OCM_CS1n	OCM_CS2n	MSTR_SDA	MSTR_SCL						D_GND	D_GND	D_GND	D_GND
R	ROM_CSn	OCM_REn	OCM_WEn	EXTCLK						D_GND	D_GND	D_GND	D_GND
T	OCMADDR17	OCMADDR18	OCMADDR19	OCM_CS0n						D_GND	CORE_1.8	D_GND	D_GND
U	OCMADDR13	OCMADDR14	OCMADDR15	OCMADDR16						CORE_1.8	CORE_1.8	D_GND	D_GND
V	OCMADDR9	OCMADDR10	OCMADDR11	OCMADDR12									
W	OCMADDR6	OCMADDR7	OCMADDR8	IO_3.3									
Y	OCMADDR3	OCMADDR4	OCMADDR5	IO_3.3									
AA	OCMADDR0	OCMADDR1	OCMADDR2	IO_3.3									
AB	OCMDATA13	OCMDATA14	OCMDATA15	IO_3.3									
AC	OCMDATA10	OCMDATA11	OCMDATA12	IO_3.3	GPIO_G09_B2 (DEGRN0)	IO_3.3	DCLK	IO_3.3	GPIO_G07_B2 (DERED4)	IO_3.3	SHIELD[1] (DEGRN3)	LVDSB_3.3	LVDSB_GND
AD	OCMDATA9	OCMDATA6	OCMDATA3	OCMDATA0	GPIO_G09_B3 (DEGRN1)	GPIO_G08_B0 (DORED0)	DEN	GPIO_G08_B5 (DOBLU1)	GPIO_G07_B3 (DERED5)	GPIO_G07_B6 (DERED8)	SHIELD[2] (DEGRN4)	LVDSB_3.3	LVDSB_3.3
AE	OCMDATA8	OCMDATA5	OCMDATA2		GPIO_G09_B0 (DERED0)	GPIO_G08_B1 (DORED1)	GPIO_G08_B3 (DOGRN1)	GPIO_G07_B0 (DERED2)	GPIO_G07_B4 (DERED6)	GPIO_G07_B7 (DERED9)	SHIELD[3] (DEGRN5)	BC+ (DEGRN8)	SHIELD[4] (DEBLU2)
AF	OCMDATA7	OCMDATA4	OCMDATA1		GPIO_G09_B1 (DERED1)	GPIO_G08_B2 (DOGRN0)	GPIO_G08_B4 (DOBLU0)	GPIO_G07_B1 (DERED3)	GPIO_G07_B5 (DERED7)	SHIELD[0] (DEGRN2)	B3+ (DEGRN6)	B3- (DEGRN7)	BC- (DEGRN9)
	1	2	3	4	5	6	7	8	9	10	11	12	13

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241204

Figure 9-10 Internal block diagram and pin configuration

9.11.4 Diagram B12, Type S9993CT (IC7D03, HDMI Panellink), Reserved

Block Diagram



Pin Configuration

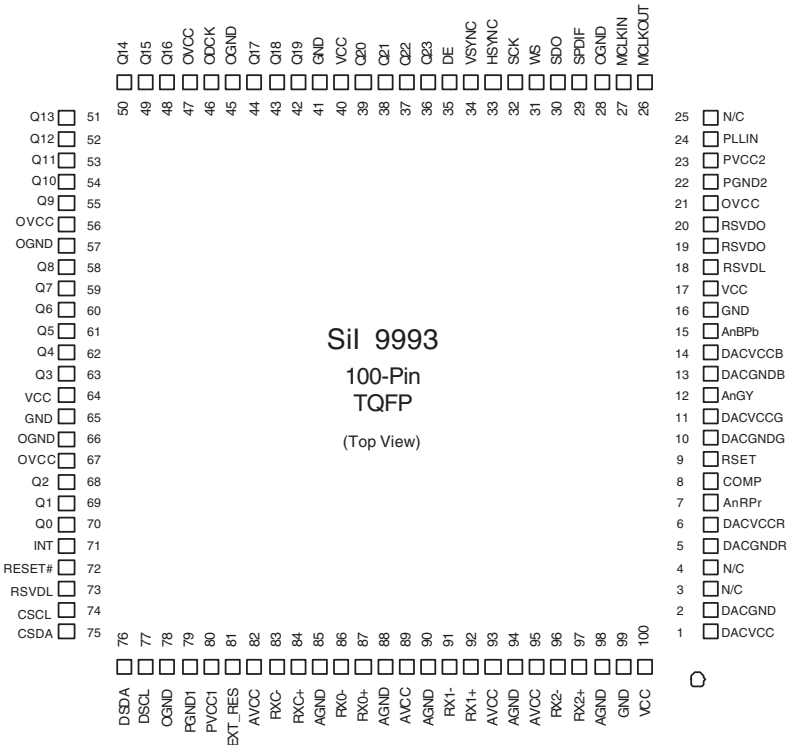


Figure 9-11 Internal block diagram and pin configuration

10. Spare Parts List

Sets Listed		
8670 000 22814 42PF7320/28		
Set Level		
Various		
1004▲	9322 226 37682	PDP S42SD-YD07
1012	3104 328 39571	LED panel LC04SD2
1062	2422 549 00148	Socket 3p m
1102	3139 267 15982	ASSY SSB 42PF7320/28
1116	3104 328 40501	Side I/O Assy 42"/50"
1174	3104 328 40312	Audio-Stdby Assy
8102	3104 311 07241	Cable 7p/1000/7p
8103	3104 311 06511	Cable 10p/280/10p
8120	3104 311 07421	Cable 6p/680/6p
8136	3104 311 10733	Cable 11p/1000/11p
8146	3104 311 08621	Cable 11p/220/11p
8150	3104 311 08831	Cable 31p/300/31p
8152	3104 311 09921	Cable 9p/680/9p
8321	3104 311 08731	Cable POSI/100/POSI
8900	3104 311 07911	Cable ring/180/ring
Small Signal Board [B]		
 Software (see Philips Service Website)		
7050	uP Hercules	Downloadable file
7051	Scaler Genesis	Downloadable file
7052	ELPD	Downloadable file
7053	Hercules NVM	Downloadable file
7054	Genesis NVM	Downloadable file
7055	DCC VGA	Downloadable file
7056	DCC HDMI	Downloadable file
Various		
1101	2422 025 18749	Connector 3p m
1102	3139 147 21461	Tuner UV1338/A F S H-4
1104	2422 549 44377	Filter 45.75MHz
1107	2422 025 18749	Connector 3p m
1202	2422 543 01414	Xtal 24.576MHz
1801	2422 543 01133	Xtal 14.32MHz 20pF
1J00	2422 025 10771	Connector 10p m
1J01	2422 025 10655	Connector 11p m
1J04	2422 025 10769	Connector 9p m
1J07	2422 086 11081	Fuse T3A 125V
1J08	4822 051 10008	Jumper 1206
1K00	2422 025 08149	Connector 6p m
1K02	2422 025 10768	Connector 3p m
1K04	2422 025 10655	Connector 11p m
1N05	2722 171 08825	Xtal 14.31818Mhz 15pF
1P01	2422 549 45325	Bead 67Ω at 100MHz
1P02	2422 549 45325	Bead 67Ω at 100MHz
1P03	2422 549 45325	Bead 67Ω at 100MHz
1P04	2422 549 45325	Bead 67Ω at 100MHz
1P05	2422 549 45325	Bead 67Ω at 100MHz
1P07	2422 025 18427	Connector 31p f
1Q01	2422 025 18477	Socket sub-D 15p f h
1Q03	2422 033 00505	Socket HDMI 19p f
1R02	2422 033 00533	Socket Combi 2p f
1R03	2422 026 05652	Socket Cinch 4p f WhRd
1R06	2422 026 05705	Socket Cinch 4p f
1R07	2422 026 05704	Socket Cinch 4p f
		
12101	4822 124 12095	100µF 20% 16V
12102	5322 126 11583	10nF 10% 50V 0603
12103	5322 126 11583	10nF 10% 50V 0603
12104	4822 122 33761	22pF 5% 50V
12105	4822 122 33761	22pF 5% 50V
12106	5322 126 11583	10nF 10% 50V 0603
12107	3198 024 44730	47nF 50V 0603
12109	5322 124 41945	22µF 20% 35V
12113	4822 124 12095	100µF 20% 16V
12207	2020 552 96718	220nF 10% 6.3V 0402
12208	4822 124 12084	1µF 20% 50V
12210	2020 552 96718	220nF 10% 6.3V 0402
12211	2020 552 96628	10nF 10% 16V 0402
12214	2020 552 96618	1nF 10% 50V 0402
12216	2020 552 96618	1nF 10% 50V 0402
12218	3198 035 71040	100nF 10% 16V 0402
12221	4822 124 12095	100µF 20% 16V
2223	2238 869 15101	100pF 5% 50V 0402
2225	2020 552 96618	1nF 10% 50V 0402
2226	3198 035 03320	3.3nF 5% 50V 0402
2227	2020 552 96618	1nF 10% 50V 0402
2228	3198 035 71040	100nF 10% 16V 0402
2229	2020 552 96637	10µF 10% 6.3V 0805
2230	3198 035 71040	100nF 10% 16V 0402
2231	2020 552 96718	220nF 10% 6.3V 0402
2232	3198 035 71040	100nF 10% 16V 0402
2233	4822 124 23002	10µF 16V
2234	2020 552 96718	220nF 10% 6.3V 0402
2235	2020 552 96718	220nF 10% 6.3V 0402
2237	2020 552 96718	220nF 10% 6.3V 0402
2239	3198 035 71040	100nF 10% 16V 0402
2241	2020 552 96718	220nF 10% 6.3V 0402
2242	3198 035 71040	100nF 10% 16V 0402
2243	4822 124 23002	10µF 16V
2250	2020 552 96618	1nF 10% 50V 0402
2251	2020 552 96656	10µF 20% 25V 1210
2252	3198 035 71040	100nF 10% 16V 0402
2253	3198 035 71040	100nF 10% 16V 0402
2254	3198 035 71040	100nF 10% 16V 0402
2255	3198 035 71040	100nF 10% 16V 0402
2256	4822 124 23002	10µF 16V
2257	3198 035 71040	100nF 10% 16V 0402
2258	2020 552 96637	10µF 10% 6.3V 0805
2259	3198 035 71040	100nF 10% 16V 0402
2262	4822 124 12082	10µF 20% 50V
2263	3198 035 26820	6.8nF 10% 16V 0402
2264	3198 017 44740	470nF 10V 0603
2265	3198 017 41050	1µF 10V 0603
2266	3198 035 71040	100nF 10% 16V 0402
2267	2020 552 96718	220nF 10% 6.3V 0402
2269	2022 031 00373	470µF 20% 16V
2270	3198 035 71040	100nF 10% 16V 0402
2271	4822 124 12095	100µF 20% 16V
2272	3198 035 71040	100nF 10% 16V 0402
2273	2020 552 96718	220nF 10% 6.3V 0402
2274	3198 017 31540	150nF 10V 0603
2277	3198 035 71040	100nF 10% 16V 0402
2280	2020 552 00027	4.7µF 2% 6.3V 0603
2281	2020 552 00027	4.7µF 2% 6.3V 0603
2285	3198 035 71040	100nF 10% 16V 0402
2286	3198 035 71040	100nF 10% 16V 0402
2449	3198 035 71040	100nF 10% 16V 0402
2501	3198 035 71040	100nF 10% 16V 0402
2502	3198 035 71040	100nF 10% 16V 0402
2503	3198 035 71040	100nF 10% 16V 0402
2504	3198 035 71040	100nF 10% 16V 0402
2505	3198 035 71040	100nF 10% 16V 0402
2506	3198 035 03310	330pF 5% 50V 0402
2507	3198 035 04710	470pF 50V 0402
2508	2238 869 15829	82pF 5% 50V 0402
2509	2238 869 15829	82pF 5% 50V 0402
2603	2020 552 96834	1µF 20% 6.3V 0402
2604	3198 035 04710	470pF 50V 0402
2605	2020 552 96834	1µF 20% 6.3V 0402
2608	2020 552 96834	1µF 20% 6.3V 0402
2609	3198 035 04710	470pF 50V 0402
2610	2020 552 96834	1µF 20% 6.3V 0402
2611	4822 124 12095	100µF 20% 16V
2612	3198 017 41050	1µF 10V 0603
2614	3198 035 71040	100nF 10% 16V 0402
2615	2022 031 00373	470µF 20% 16V
2618	2022 031 00373	470µF 20% 16V
2704	4822 124 23002	10µF 16V
2706	4822 124 23002	10µF 16V
2709	4822 124 80151	47µF 16V
2710	2020 552 96656	10µF 20% 25V 1210
2711	2020 552 96656	10µF 20% 25V 1210
2713	2020 012 00028	470µF 20% 16V
2714	3198 035 02210	220pF 5% 50V 0402
2715	2020 552 96455	22nF 10% 16V 0402
2716	2020 012 00028	470µF 20% 16V
2730	2020 552 96656	10µF 20% 25V 1210
2731	2022 031 00373	470µF 20% 16V
2733	3198 035 02210	220pF 5% 50V 0402
2734	2238 787 15641	22nF 5% 16V 0402
2735	3198 035 04710	470pF 50V 0402
2736	2022 031 00308	22µF 20% 35V
2737	2022 031 00373	470µF 20% 16V
2738	4822 124 80151	47µF 16V
2739	4822 124 80151	47µF 16V
2741	4822 126 13879	220nF +80-20% 16V
2750	2020 552 00183	2.2µF 10% 6.3V 0603
2753	2022 031 00373	470µF 20% 16V
2755	3198 035 14720	4.7nF 5% 25V 0402
2756	3198 035 04710	470pF 50V 0402
2757	2022 031 00373	470µF 20% 16V
2758	2022 031 00373	470µF 20% 16V
2761	2020 552 96671	1µF 10% 25V
2762	4822 124 23237	22µF 6.3V
2800	2020 021 91557	100µF 20% 16V
2801	3198 035 71040	100nF 10% 16V 0402
2802	3198 035 71040	100nF 10% 16V 0402
2803	3198 035 71040	100nF 10% 16V 0402
2804	3198 035 71040	100nF 10% 16V 0402
2805	3198 035 71040	100nF 10% 16V 0402
2806	3198 035 71040	100nF 10% 16V 0402
2807	3198 035 71040	100nF 10% 16V 0402
2808	3198 035 71040	100nF 10% 16V 0402
2809	3198 035 71040	100nF 10% 16V 0402
2810	3198 035 71040	100nF 10% 16V 0402
2811	3198 035 71040	100nF 10% 16V 0402
2812	3198 035 71040	100nF 10% 16V 0402
2813	3198 035 71040	100nF 10% 16V 0402
2814	3198 035 71040	100nF 10% 16V 0402
2815	5322 124 41945	22µF 20% 35V
2816	3198 035 71040	100nF 10% 16V 0402
2817	3198 035 71040	100nF 10% 16V 0402
2818	3198 035 71040	100nF 10% 16V 0402
2819	3198 035 71040	100nF 10% 16V 0402
2820	3198 035 71040	100nF 10% 16V 0402
2821	3198 035 71040	100nF 10% 16V 0402
2822	3198 035 71040	100nF 10% 16V 0402
2823	4822 126 14519	22pF 5% 50V 0402
2824	4822 126 14519	22pF 5% 50V 0402
2900	3198 035 71040	100nF 10% 16V 0402
2901	2020 552 96618	1nF 10% 50V 0402
2902	2020 021 00046	470µF 20% 16V
2903	3198 035 71040	100nF 10% 16V 0402
2904	4822 124 80151	47µF 16V
2905	2020 021 91557	100µF 20% 16V
2906	3198 035 71040	100nF 10% 16V 0402
2907	3198 035 71040	100nF 10% 16V 0402
2908	3198 035 71040	100nF 10% 16V 0402
2909	3198 035 71040	100nF 10% 16V 0402
2910	3198 035 71040	100nF 10% 16V 0402
2911	3198 035 71040	100nF 10% 16V 0402
2912	3198 035 71040	100nF 10% 16V 0402
2913	3198 035 71040	100nF 10% 16V 0402
2914	3198 035 71040	100nF 10% 16V 0402
2915	3198 035 71040	100nF 10% 16V 0402
2916	3198 035 71040	100nF 10% 16V 0402
2917	2020 021 91557	100µF 20% 16V
2918	3198 035 71040	100nF 10% 16V 0402
2919	3198 035 71040	100nF 10% 16V 0402
2920	3198 035 71040	100nF 10% 16V 0402
2921	3198 035 71040	100nF 10% 16V 0402
2922	3198 035 71040	100nF 10% 16V 0402
2923	3198 035 71040	100nF 10% 16V 0402
2924	3198 035 71040	100nF 10% 16V 0402
2925	3198 035 71040	100nF 10% 16V 0402
2926	3198 035 71040	100nF 10% 16V 0402
2927	3198 035 71040	100nF 10% 16V 0402
2928	3198 035 71040	100nF 10% 16V 0402
2929	3198 035 71040	100nF 10% 16V 0402
2930	3198 035 71040	100nF 10% 16V 0402
2931	3198 035 71040	100nF 10% 16V 0402
2932	3198 035 71040	100nF 10% 16V 0402
2933	3198 035 71040	100nF 10% 16V 0402
2934	4822 124 80151	47µF 16V
2935	3198 035 71040	100nF 10% 16V 0402
2936	3198 035 71040	100nF 10% 16V 0402
2937	3198 035 71040	100nF 10% 16V 0402
2938	3198 035 71040	100nF 10% 16V 0402
2939	3198 035 71040	100n

2A12	2020 552 96628	10nF 10% 16V 0402	2E31	3198 035 71040	100nF 10% 16V 0402	2M17	3198 035 71040	100nF 10% 16V 0402
2A13	3198 035 71040	100nF 10% 16V 0402	2E32	3198 035 71040	100nF 10% 16V 0402	2M18	3198 035 71040	100nF 10% 16V 0402
2B01	4822 124 80151	47µF 16V	2E33	2020 552 00005	4.7µF 10% 6.3V 0603	2M19	3198 035 71040	100nF 10% 16V 0402
2B02	4822 124 11131	47µF 6.3V	2E34	2020 552 00005	4.7µF 10% 6.3V 0603	2M20	3198 035 71040	100nF 10% 16V 0402
2B03	3198 035 71040	100nF 10% 16V 0402	2E35	2020 552 00005	4.7µF 10% 6.3V 0603	2M21	2020 552 00183	2.2µF 10% 6.3V 0603
2B04	3198 035 71040	100nF 10% 16V 0402	2E36	3198 035 71040	100nF 10% 16V 0402	2M22	3198 035 71040	100nF 10% 16V 0402
2B05	3198 035 71040	100nF 10% 16V 0402	2J02	2020 552 96618	1nF 10% 50V 0402	2M23	4822 124 12095	100µF 20% 16V
2B06	3198 035 71040	100nF 10% 16V 0402	2J03	2020 552 96618	1nF 10% 50V 0402	2M24	3198 035 71040	100nF 10% 16V 0402
2B07	3198 035 71040	100nF 10% 16V 0402	2J17	2020 552 96618	1nF 10% 50V 0402	2M25	3198 035 71040	100nF 10% 16V 0402
2B08	3198 035 71040	100nF 10% 16V 0402	2J18	2238 869 15101	100pF 5% 50V 0402	2M26	3198 035 71040	100nF 10% 16V 0402
2B09	3198 035 71040	100nF 10% 16V 0402	2J19	2238 869 15101	100pF 5% 50V 0402	2M27	3198 035 71040	100nF 10% 16V 0402
2B10	3198 035 71040	100nF 10% 16V 0402	2J21	2238 869 15101	100pF 5% 50V 0402	2M28	3198 035 71040	100nF 10% 16V 0402
2B11	3198 035 71040	100nF 10% 16V 0402	2J22	2238 869 15101	100pF 5% 50V 0402	2M29	3198 035 71040	100nF 10% 16V 0402
2B12	3198 035 71040	100nF 10% 16V 0402	2J23	2238 869 15101	100pF 5% 50V 0402	2M30	3198 035 71040	100nF 10% 16V 0402
2B13	3198 035 71040	100nF 10% 16V 0402	2J26	2238 869 15101	100pF 5% 50V 0402	2M31	4822 124 12095	100µF 20% 16V
2B14	3198 035 71040	100nF 10% 16V 0402	2J27	2238 869 15101	100pF 5% 50V 0402	2M32	4822 124 12095	100µF 20% 16V
2B15	3198 035 71040	100nF 10% 16V 0402	2J28	2238 869 15101	100pF 5% 50V 0402	2M56	4822 124 12095	100µF 20% 16V
2B16	3198 035 71040	100nF 10% 16V 0402	2J29	2238 869 15101	100pF 5% 50V 0402	2M65	3198 035 71040	100nF 10% 16V 0402
2B17	3198 035 71040	100nF 10% 16V 0402	2J30	2020 552 96618	1nF 10% 50V 0402	2M66	4822 124 12095	100nF 10% 16V
2B18	5322 124 41945	22µF 20% 35V	2J31	2238 869 15101	100pF 5% 50V 0402	2M67	3198 035 71040	100nF 10% 16V 0402
2C00	3198 035 71040	100nF 10% 16V 0402	2J35	2020 552 96618	1nF 10% 50V 0402	2M68	4822 124 12095	100µF 20% 16V
2C01	4822 124 23002	10µF 16V	2J36	2020 552 96618	1nF 10% 50V 0402	2N01	3198 035 71040	100nF 10% 16V 0402
2C02	3198 035 71040	100nF 10% 16V 0402	2K00	2020 552 96618	1nF 10% 50V 0402	2N02	3198 035 71040	100nF 10% 16V 0402
2C03	3198 035 71040	100nF 10% 16V 0402	2K01	2020 552 96618	1nF 10% 50V 0402	2N03	2020 552 96834	1µF 20% 6.3V 0402
2D00	3198 035 71040	100nF 10% 16V 0402	2K02	2238 869 15109	10pF 5% 50V 0402	2N04	2020 552 96618	1nF 10% 50V 0402
2D01	2020 552 96628	10nF 10% 16V 0402	2K03	2238 869 15109	10pF 5% 50V 0402	2N05	3198 035 71040	100nF 10% 16V 0402
2D02	2020 552 96618	1nF 10% 50V 0402	2K04	2238 869 15109	10pF 5% 50V 0402	2N06	3198 035 71040	100nF 10% 16V 0402
2D03	2020 552 96656	10µF 20% 25V 1210	2K05	2238 869 15109	10pF 5% 50V 0402	2N07	3198 035 71040	100nF 10% 16V 0402
2D04	2020 552 96628	10nF 10% 16V 0402	2K06	2238 869 15101	100pF 5% 50V 0402	2N08	3198 035 71040	100nF 10% 16V 0402
2D05	3198 035 74730	47nF 5% 16V 0402	2K07	2238 869 15101	100pF 5% 50V 0402	2N09	3198 035 71040	100nF 10% 16V 0402
2D06	2020 552 96656	10µF 20% 25V 1210	2K08	2020 552 00183	2.2µF 10% 6.3V 0603	2N10	3198 035 71040	100nF 10% 16V 0402
2D07	4822 124 23237	22µF 6.3V	2K10	2238 869 15101	100pF 5% 50V 0402	2N11	2238 869 15101	100pF 5% 50V 0402
2D08	3198 035 71040	100nF 10% 16V 0402	2K11	2238 869 15101	100pF 5% 50V 0402	2N12	2238 869 15101	100pF 5% 50V 0402
2D09	2020 552 96618	1nF 10% 50V 0402	2K12	2020 552 00183	2.2µF 10% 6.3V 0603	2N13	2238 869 15101	100pF 5% 50V 0402
2D10	2020 552 96618	1nF 10% 50V 0402	2K13	2238 869 15101	100pF 5% 50V 0402	2N14	2238 869 15101	100pF 5% 50V 0402
2D11	2020 552 96618	1nF 10% 50V 0402	2K14	2238 869 15101	100pF 5% 50V 0402	2N15	2238 869 15101	100pF 5% 50V 0402
2D12	4822 124 23237	22µF 6.3V	2K16	2238 869 15101	100pF 5% 50V 0402	2N16	2238 869 15101	100pF 5% 50V 0402
2D13	3198 035 71040	100nF 10% 16V 0402	2K17	2238 869 15101	100pF 5% 50V 0402	2P01	2020 552 00183	2.2µF 10% 6.3V 0603
2D14	2020 552 96618	1nF 10% 50V 0402	2K18	2238 869 15101	100pF 5% 50V 0402	2P02	3198 035 71040	100nF 10% 16V 0402
2D15	2020 552 96618	1nF 10% 50V 0402	2K19	2020 552 96618	1nF 10% 50V 0402	2P03	3198 035 71040	100nF 10% 16V 0402
2D16	2020 552 96618	1nF 10% 50V 0402	2K20	2020 552 96618	1nF 10% 50V 0402	2P04	3198 035 71040	100nF 10% 16V 0402
2D17	2020 552 96656	10µF 20% 25V 1210	2K21	2238 869 15101	100pF 5% 50V 0402	2P05	3198 035 71040	100nF 10% 16V 0402
2D18	3198 035 71040	100nF 10% 16V 0402	2K22	2238 869 15101	100pF 5% 50V 0402	2P06	3198 035 71040	100nF 10% 16V 0402
2D19	2020 552 96618	1nF 10% 50V 0402	2K23	2238 869 15101	100pF 5% 50V 0402	2P07	3198 035 71040	100nF 10% 16V 0402
2D20	2020 552 96656	10µF 20% 25V 1210	2K24	2238 869 15101	100pF 5% 50V 0402	2P08	3198 035 71040	100nF 10% 16V 0402
2D21	3198 035 71040	100nF 10% 16V 0402	2K25	2238 869 15101	100pF 5% 50V 0402	2P09	3198 035 71040	100nF 10% 16V 0402
2D22	2020 552 96618	1nF 10% 50V 0402	2K26	2238 869 15101	100pF 5% 50V 0402	2P10	3198 035 71040	100nF 10% 16V 0402
2D23	4822 124 23002	10µF 16V	2K27	2238 869 15101	100pF 5% 50V 0402	2P11	3198 035 71040	100nF 10% 16V 0402
2D24	3198 035 71040	100nF 10% 16V 0402	2K28	2238 869 15101	100pF 5% 50V 0402	2P12	3198 035 71040	100nF 10% 16V 0402
2D25	2020 552 96618	1nF 10% 50V 0402	2L02	2020 552 96637	10µF 10% 6.3V 0805	2P13	3198 035 71040	100nF 10% 16V 0402
2D26	2020 552 96618	1nF 10% 50V 0402	2L03	3198 035 71040	100nF 10% 16V 0402	2P14	3198 035 71040	100nF 10% 16V 0402
2D27	4822 124 23237	22µF 6.3V	2L04	3198 035 71040	100nF 10% 16V 0402	2P15	4822 124 12095	100µF 20% 16V
2D28	3198 035 71040	100nF 10% 16V 0402	2L05	3198 035 71040	100nF 10% 16V 0402	2P16	3198 035 71040	100nF 10% 16V 0402
2D29	2020 552 96618	1nF 10% 50V 0402	2L06	3198 035 71040	100nF 10% 16V 0402	2P17	2020 552 00183	2.2µF 10% 6.3V 0603
2D30	2020 552 96618	1nF 10% 50V 0402	2L07	2020 552 96637	10µF 10% 6.3V 0805	2P18	2020 552 00183	2.2µF 10% 6.3V 0603
2D31	2020 552 96618	1nF 10% 50V 0402	2L08	3198 035 71040	100nF 10% 16V 0402	2P19	3198 035 71040	100nF 10% 16V 0402
2D32	4822 124 11131	47µF 6.3V	2L09	3198 035 71040	100nF 10% 16V 0402	2P20	3198 035 71040	100nF 10% 16V 0402
2D33	3198 035 71040	100nF 10% 16V 0402	2L10	3198 035 71040	100nF 10% 16V 0402	2P21	3198 035 71040	100nF 10% 16V 0402
2D34	4822 124 11131	47µF 6.3V	2L11	3198 035 71040	100nF 10% 16V 0402	2P22	2020 552 00183	2.2µF 10% 6.3V 0603
2D35	3198 035 71040	100nF 10% 16V 0402	2L13	3198 035 74730	47nF 5% 16V 0402	2P23	3198 035 71040	100nF 10% 16V 0402
2D36	3198 017 41050	1µF 10V 0603	2L17	3198 035 74730	47nF 5% 16V 0402	2P24	3198 035 71040	100nF 10% 16V 0402
2D37	2020 552 96628	10nF 10% 16V 0402	2L20	3198 035 71040	100nF 10% 16V 0402	2P25	3198 035 71040	100nF 10% 16V 0402
2D38	4822 124 11131	47µF 6.3V	2L21	3198 035 71040	100nF 10% 16V 0402	2P26	3198 035 71040	100nF 10% 16V 0402
2D39	3198 035 71040	100nF 10% 16V 0402	2L22	2020 552 96637	10µF 10% 6.3V 0805	2P27	3198 035 71040	100nF 10% 16V 0402
2D40	3198 017 41050	1µF 10V 0603	2L23	3198 035 71040	100nF 10% 16V 0402	2P28	3198 035 71040	100nF 10% 16V 0402
2D41	2020 552 96628	10nF 10% 16V 0402	2L24	3198 035 71040	100nF 10% 16V 0402	2P29	3198 035 71040	100nF 10% 16V 0402
2E00	2020 552 00005	4.7µF 10% 6.3V 0603	2L26	2020 552 96718	220nF 10% 6.3V 0402	2P30	3198 035 71040	100nF 10% 16V 0402
2E01	2020 552 00005	4.7µF 10% 6.3V 0603	2L27	4822 124 23002	10µF 16V	2P31	3198 035 71040	100nF 10% 16V 0402
2E02	2020 552 00005	4.7µF 10% 6.3V 0603	2L28	4822 124 23002	10µF 16V	2P32	3198 035 71040	100nF 10% 16V 0402
2E03	3198 035 71040	100nF 10% 16V 0402	2L29	4822 124 23002	10µF 16V	2P33	3198 035 71040	100nF 10% 16V 0402
2E07	4822 126 14324	33pF 5% 50V 0402	2L30	4822 124 23002	10µF 16V	2P34	3198 035 71040	100nF 10% 16V 0402
2E08	2020 552 00005	4.7µF 10% 6.3V 0603	2L31	4822 124 12095	100µF 20% 16V	2P35	3198 035 71040	100nF 10% 16V 0402
2E09	4822 126 14324	33pF 5% 50V 0402	2L32	4822 124 12095	100µF 20% 16V	2P36	2238 869 15109	10pF 5% 50V 0402
2E10	2020 552 00005	4.7µF 10% 6.3V 0603	2L33	3198 035 71040	100nF 10% 16V 0402	2P37	2238 869 15109	10pF 5% 50V 0402
2E11	4822 126 14324	33pF 5% 50V 0402	2L34	3198 035 71040	100nF 10% 16V 0402	2P38	2238 869 15109	10pF 5% 50V 0402
2E12	2020 552 00005	4.7µF 10% 6.3V 0603	2L37	4822 126 14524	68pF 5% 50V 0402	2P39	2238 869 15109	10pF 5% 50V 0402
2E13	3198 017 41050	1µF 10V 0603	2L39	2238 869 15829	82pF 5% 50V 0402	2P40	2238 869 15109	10pF 5% 50V 0402
2E14	4822 126 14324	33pF 5% 50V 0402	2M00	3198 035 71040	100nF 10% 16V 0402	2P41	2238 869 15109	10pF 5% 50V 0402
2E15	3198 035 71040	100nF 10% 16V 0402	2M01	3198 035 71040	100nF 10% 16V 0402	2P42	2238 869 15109	10pF 5% 50V 0402
2E16	3198 035 71040	100nF 10% 16V 0402	2M02	3198 035 71040	100nF 10% 16V 0402	2P43	2238 869 15109	10pF 5

2R03	2020 552 00183	2.2μF 10% 6.3V 0603	3462	4822 117 13545	100Ω 1% 0402	3C02	4822 117 13548	1kΩ 5% 0402
2R04	4822 126 14508	180pF 5% 50V 0603	3501	4822 117 13543	470Ω 5% 0402	3C04	3198 031 11030	4 x 10kΩ 5% 1206
2R35	2020 552 00005	4.7μF 10% 6.3V 0603	3502	3198 031 04730	47Ω 5% 0402	3C05	4822 117 13606	10kΩ 5% 0.01W 0402
2R41	2020 552 00005	4.7μF 10% 6.3V 0603	3604	4822 117 13601	22kΩ 5% 0402	3C06	3198 031 11030	4 x 10kΩ 5% 1206
2R50	4822 126 14508	180pF 5% 50V 0603	3605	4822 117 13601	22kΩ 5% 0402	3C07	3198 031 11030	4 x 10kΩ 5% 1206
2R51	2020 552 00183	2.2μF 10% 6.3V 0603	3609	4822 117 13601	22kΩ 5% 0402	3C08	3198 031 11030	4 x 10kΩ 5% 1206
2R54	2020 552 00183	2.2μF 10% 6.3V 0603	3610	4822 117 11297	100kΩ 5% 0.1W	3C09	3198 031 11030	4 x 10kΩ 5% 1206
2R55	4822 126 14508	180pF 5% 50V 0603	3611	4822 117 11297	100kΩ 5% 0.1W	3C10	3198 031 11030	4 x 10kΩ 5% 1206
2R57	2238 586 59812	100nF 20% 50V 0603	3612	4822 117 13601	22kΩ 5% 0402	3C16	3198 031 11030	4 x 10kΩ 5% 1206
2R58	2020 552 00005	4.7μF 10% 6.3V 0603	3616	4822 117 13548	1kΩ 5% 0402	3C17	4822 117 13606	10kΩ 5% 0.01W 0402
2R59	2020 552 00005	4.7μF 10% 6.3V 0603	3617	4822 117 13548	1kΩ 5% 0402	3C18	4822 117 13606	10kΩ 5% 0.01W 0402
2R81	4822 126 14241	330pF 0603 50V	3619	4822 117 13606	10kΩ 5% 0.01W 0402	3D00	3198 031 04720	4.7kΩ 5% 0402
2R82	4822 126 14241	330pF 0603 50V	3620	4822 117 13606	10kΩ 5% 0.01W 0402	3D01	3198 031 04720	4.7kΩ 5% 0402
2R85	4822 124 23002	10μF 16V	3628	4822 117 13606	10kΩ 5% 0.01W 0402	3D02	3198 031 04720	4.7kΩ 5% 0402
2R86	4822 124 23002	10μF 16V	3629	4822 117 13601	22kΩ 5% 0402	3D03	4822 117 13605	Jumper 0402
			3630	4822 117 13602	2.2kΩ 5% 0.01W 0402	3D04	4822 117 13605	Jumper 0402
			3631	4822 117 13602	2.2kΩ 5% 0.01W 0402	3D05	4822 117 13545	100Ω 1% 0402
			3632	2322 705 70569	56Ω 5% 0402	3D06	4822 117 13545	100Ω 1% 0402
			3633	2322 705 70569	56Ω 5% 0402	3D07	3198 031 04720	4.7kΩ 5% 0402
			3708	4822 117 13606	10kΩ 5% 0.01W 0402	3D08	3198 031 04720	4.7kΩ 5% 0402
			3709	3198 031 06820	6.8kΩ 5% 0.01W 0402	3D09	3198 031 03390	33Ω 1% 0402
			3712	5322 117 13031	5.6kΩ 5% 0.063W 0603	3D10	3198 031 03910	390Ω 1% 0402
			3713	2322 704 63302	3.3kΩ 1% 0603	3D11	4822 117 13545	100Ω 1% 0402
			3716	3198 031 04720	4.7kΩ 5% 0402	3D12	3198 031 03920	3.9kΩ 5% 0402
			3732	2322 704 61002	1kΩ 1%	3D15	3198 031 13390	4 x 33Ω 5% 1206
			3733	2322 704 63302	3.3kΩ 1% 0603	3D16	3198 031 13390	4 x 33Ω 5% 1206
			3734	4822 117 13602	2.2kΩ 5% 0.01W 0402	3D17	3198 031 13390	4 x 33Ω 5% 1206
			3735	4822 117 13548	1kΩ 5% 0402	3D18	3198 031 13390	4 x 33Ω 5% 1206
			3736	3198 031 04720	4.7kΩ 5% 0402	3D19	3198 021 31080	1Ω 5% 0603
			3740	3198 031 01520	1.2kΩ 5% 0.01W 0402	3D20	3198 021 31080	1Ω 5% 0603
			3741	3198 031 01520	1.2kΩ 5% 0.01W 0402	3D21	3198 031 13390	4 x 33Ω 5% 1206
			3742	3198 031 01530	15kΩ 5% 0.01W 0402	3D22	3198 031 03390	33Ω 1% 0402
			3743	4822 117 13601	22kΩ 5% 0402	3D23	3198 031 03390	33Ω 1% 0402
			3750	4822 117 13601	22kΩ 5% 0402	3D24	4822 117 13596	220Ω 5% 0.01W 0402
			3751	3198 021 31080	1Ω 5% 0603	3D25	4822 117 13545	100Ω 1% 0402
			3752	3198 021 31080	1Ω 5% 0603	3D26	4822 117 13596	220Ω 5% 0.01W 0402
			3753	2322 704 61002	1kΩ 1%	3D27	4822 117 13545	100Ω 1% 0402
			3754	2322 704 63302	3.3kΩ 1% 0603	3E00	2322 705 70569	56Ω 5% 0402
			3759	3198 031 01230	12kΩ 5% 0402	3E01	2322 705 70569	56Ω 5% 0402
			3761	4822 117 13545	100Ω 1% 0402	3E02	2322 705 70569	56Ω 5% 0402
			3800	4822 117 13606	10kΩ 5% 0.01W 0402	3E06	3198 031 04730	47Ω 5% 0402
			3801	2350 035 10229	4 x 22Ω 5% 1206	3E07	3198 031 04730	47Ω 5% 0402
			3802	2350 035 10229	4 x 22Ω 5% 1206	3E08	3198 031 04730	47Ω 5% 0402
			3803	2350 035 10229	4 x 22Ω 5% 1206	3E09	3198 031 04730	47Ω 5% 0402
			3804	2350 035 10229	4 x 22Ω 5% 1206	3E10	3198 031 04730	47Ω 5% 0402
			3805	2350 035 10229	4 x 22Ω 5% 1206	3E11	3198 031 04730	47Ω 5% 0402
			3806	2350 035 10229	4 x 22Ω 5% 1206	3E12	4822 117 13606	10kΩ 5% 0.01W 0402
			3807	2350 035 10229	4 x 22Ω 5% 1206	3E19	2322 705 70569	56Ω 5% 0402
			3808	2350 035 10229	4 x 22Ω 5% 1206	3E20	2322 705 70569	56Ω 5% 0402
			3809	2350 035 10229	4 x 22Ω 5% 1206	3E21	2322 705 70569	56Ω 5% 0402
			3810	2350 035 10229	4 x 22Ω 5% 1206	3E22	4822 117 13632	100kΩ 1% 0603 0.62W
			3811	2350 035 10229	4 x 22Ω 5% 1206	3E23	3198 031 08210	820Ω 5% 0.5W
			3812	2350 035 10229	4 x 22Ω 5% 1206	3E24	4822 117 13543	470Ω 5% 0402
			3813	2350 035 10229	4 x 22Ω 5% 1206	3E25	2322 705 70399	39Ω 5% 0402
			3814	3198 031 02290	22Ω 5% 0.1W 0402	3E26	3198 031 02290	22Ω 5% 0.1W 0402
			3815	3198 031 02290	22Ω 5% 0.1W 0402	3E27	2322 705 70399	39Ω 5% 0402
			3816	3198 031 02290	22Ω 5% 0.1W 0402	3E28	3198 031 02290	22Ω 5% 0.1W 0402
			3817	4822 117 13606	10kΩ 5% 0.01W 0402	3E29	2322 705 70399	39Ω 5% 0402
			3818	4822 117 13606	10kΩ 5% 0.01W 0402	3E30	3198 031 02290	22Ω 5% 0.1W 0402
			3820	4822 117 13606	10kΩ 5% 0.01W 0402	3E31	4822 117 13545	100Ω 1% 0402
			3822	4822 117 13545	100Ω 1% 0402	3E32	4822 117 13545	100Ω 1% 0402
			3824	3198 031 03320	3.3kΩ 5% 0402	3E33	4822 117 13545	100Ω 1% 0402
			3825	3198 031 11030	4 x 10kΩ 5% 1206	3E34	4822 117 13545	100Ω 1% 0402
			3826	3198 031 11030	4 x 10kΩ 5% 1206	3E35	4822 117 13545	100Ω 1% 0402
			3827	4822 117 13606	10kΩ 5% 0.01W 0402	3E36	4822 117 13545	100Ω 1% 0402
			3828	4822 117 13606	10kΩ 5% 0.01W 0402	3E37	3198 031 02290	22Ω 5% 0.1W 0402
			3829	4822 117 13606	10kΩ 5% 0.01W 0402	3E38	4822 117 13545	100Ω 1% 0402
			3831	4822 117 13545	100Ω 1% 0402	3E39	4822 117 13545	100Ω 1% 0402
			3832	4822 117 13545	100Ω 1% 0402	3E41	4822 117 13545	100Ω 1% 0402
			3833	3198 031 01090	10Ω 5% 0.01W 0402	3E42	4822 117 13545	100Ω 1% 0402
			3834	4822 117 13606	10kΩ 5% 0.01W 0402	3E43	4822 117 13545	100Ω 1% 0402
			3835	4822 117 13606	10kΩ 5% 0.01W 0402	3E44	4822 117 13545	100Ω 1% 0402
			3836	4822 117 13606	10kΩ 5% 0.01W 0402	3E45	4822 117 13545	100Ω 1% 0402
			3837	4822 117 13606	10kΩ 5% 0.01W 0402	3E49	3198 031 02290	22Ω 5% 0.1W 0402
			3838	4822 117 13606	10kΩ 5% 0.01W 0402	3E50	3198 031 04730	47Ω 5% 0402
			3839	4822 117 13545	100Ω 1% 0402	3E51	3198 031 04730	47Ω 5% 0402
			3840	3198 031 02290	22Ω 5% 0.1W 0402	3E52	3198 031 04730	47Ω 5% 0402
			3841	4822 117 13606	10kΩ 5% 0.01W 0402	3E53	3198 031 04730	47Ω 5% 0402
			3900	3198 031 03320	3.3kΩ 5% 0402	3E54	3198 031 04730	47Ω 5% 0402
			3901	4822 117 13606	10kΩ 5% 0.01W 0402	3E55	3198 031 04730	47Ω 5% 0402
			3902	4822 117 13606	10kΩ 5% 0.01W 0402	3J05	3198 031 06890	68Ω 5% 0402
			3903	4822 117 13545	100Ω 1% 0402	3K00	4822 117 13545	100Ω 1% 0402
			3904	4822 117 13545	100Ω 1% 0402	3K01	4822 117 13545	100Ω 1% 0402
			3A07	4822 117 13606	10kΩ 5% 0.01W 0402	3K02	4822 117 13606	10kΩ 5% 0.01W 0402
			3A08	4822 117 13606	10kΩ 5% 0.01W 0402	3K03	3198 031 01530	15kΩ 5% 0.01W 0402
			3A10	4822 117 13606	10kΩ 5% 0.01W 0402	3K05	4822 117 13606	10kΩ 5% 0.01W 0402
			3A11	4822 117 13606	10kΩ 5% 0.01W 0402	3K06	3198 031 01530	15kΩ 5% 0.01W 0402
			3A13	4822 117 13606	10kΩ 5% 0.01W 0402	3K07	2322 705 70399	39Ω 5% 0402
			3A14	3198 031 04720	4.7kΩ 5% 0402	3K09	2322 705 70399	39Ω 5% 0402
			3B01	4822 117 12706	10kΩ 1% 0.063W 0603	3K11	3198 031 06890	68Ω 5% 0402
			3B02	4822 117 12706	10kΩ 1% 0.063W 0603	3K12	3198 031 06890	68Ω 5% 0402
			3B03	2322 704 61501	150Ω 1% 0603	3K13	3198 031 06890	68Ω 5% 0402
			3C00	4822 117 13606	10kΩ 5% 0.01W 0402	3L00	4822 117 13548	1kΩ 5% 0402
			3C01	4822 117 13606	10kΩ 5% 0.01W 0402	3L04	4822 117 13605	Jumper 0402

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3L05	3198 031 01510	150Ω 5% 0.01W 0402	3Q01	4822 051 30759	75Ω 5% 0.062W	5209	4822 157 11716	Bead 30Ω at 100MHz
3L06	4822 117 13605	Jumper 0402	3Q06	4822 051 30759	75Ω 5% 0.062W	5210	4822 157 11716	Bead 30Ω at 100MHz
3L10	4822 117 13597	330Ω 5% 0.01W 0402	3Q11	4822 051 30759	75Ω 5% 0.062W	5211	4822 157 11716	Bead 30Ω at 100MHz
3L11	3198 031 01510	150Ω 5% 0.01W 0402	3Q16	4822 051 30151	150Ω 5% 0.062W	5212	4822 157 11716	Bead 30Ω at 100MHz
3L12	4822 117 13548	1kΩ 5% 0402	3Q17	4822 051 30102	1kΩ 5% 0.062W	5213	4822 157 11716	Bead 30Ω at 100MHz
3L16	4822 117 13605	Jumper 0402	3Q18	4822 051 30103	10kΩ 5% 0.062W	5214	2422 536 00667	1000μH 20% 7032
3L17	3198 031 01510	150Ω 5% 0.01W 0402	3Q21	4822 051 30222	2.2kΩ 5% 0.062W	5216	4822 157 11716	Bead 30Ω at 100MHz
3L19	3198 031 01510	150Ω 5% 0.01W 0402	3Q22	4822 051 30221	220Ω 5% 0.062W	5501	3198 018 31080	1μH 10% 0805
3L20	3198 031 01510	150Ω 5% 0.01W 0402	3Q23	4822 051 30222	2.2kΩ 5% 0.062W	5704	2422 549 45333	Bead 120Ω at 100MHz
3L21	4822 117 13602	2.2kΩ 5% 0.01W 0402	3Q24	4822 051 30221	220Ω 5% 0.062W	5709	2422 535 94134	10μH 20% 0805
3L22	4822 117 13602	2.2kΩ 5% 0.01W 0402	3Q25	4822 051 30103	10kΩ 5% 0.062W	5712	2422 536 00339	33μH 20%
3L24	4822 117 13602	2.2kΩ 5% 0.01W 0402	3Q26	4822 051 30103	10kΩ 5% 0.062W	5713	2422 535 94995	10μH 20%
3L25	2350 035 10229	4 x 22Ω 5% 1206	3Q27	4822 051 30103	10kΩ 5% 0.062W	5730	2422 535 94134	10μH 20% 0805
3L26	2350 035 10229	4 x 22Ω 5% 1206	3Q30	4822 051 30103	10kΩ 5% 0.062W	5733	2422 536 00689	220μH 20%
3L27	2350 035 10229	4 x 22Ω 5% 1206	3Q31	4822 051 30103	10kΩ 5% 0.062W	5735	2422 536 00667	1000μH 20% 7032
3L28	2350 035 10229	4 x 22Ω 5% 1206	3Q32	4822 051 30153	15kΩ 5% 0.062W	5737	2422 535 94134	10μH 20% 0805
3L30	3198 031 02290	22Ω 5% 0.1W 0402	3Q33	4822 051 30153	15kΩ 5% 0.062W	5738	2422 549 45333	Bead 120Ω at 100MHz
3L31	3198 031 02290	22Ω 5% 0.1W 0402	3Q34	4822 051 30222	2.2kΩ 5% 0.062W	5752	2422 535 94134	10μH 20% 0805
3L32	4822 117 13602	2.2kΩ 5% 0.01W 0402	3Q40	4822 051 30102	1kΩ 5% 0.062W	5753	2422 536 01178	470μH 20% 10145
3L33	4822 117 13596	220Ω 5% 0.01W 0402	3R00	4822 051 30103	10kΩ 5% 0.062W	5754	2422 535 94134	10μH 20% 0805
3L34	4822 117 13605	Jumper 0402	3R02	4822 051 30153	15kΩ 5% 0.062W	5900	2422 549 45333	Bead 120Ω at 100MHz
3L35	4822 117 13596	220Ω 5% 0.01W 0402	3R03	4822 051 30103	10kΩ 5% 0.062W	5901	2422 549 45333	Bead 120Ω at 100MHz
3L36	3198 031 03320	3.3kΩ 5% 0402	3R05	4822 051 30153	15kΩ 5% 0.062W	5902	2422 549 45333	Bead 120Ω at 100MHz
3L37	3198 031 03320	3.3kΩ 5% 0402	3R12	4822 051 30689	68Ω 5% 0.063W 0603	5903	2422 549 45333	Bead 120Ω at 100MHz
3L38	4822 117 13605	Jumper 0402	3R13	4822 051 30102	1kΩ 5% 0.062W	5904	2422 549 45333	Bead 120Ω at 100MHz
3M01	2350 035 10689	4 x 68Ω 5%	3R16	4822 051 30759	75Ω 5% 0.062W	5905	2422 549 45333	Bead 120Ω at 100MHz
3M02	2350 035 10689	4 x 68Ω 5%	3R17	4822 051 30101	100Ω 5% 0.062W	5906	2422 549 45333	Bead 120Ω at 100MHz
3M03	2350 035 10689	4 x 68Ω 5%	3R20	4822 051 30102	1kΩ 5% 0.062W	5907	2422 549 45333	Bead 120Ω at 100MHz
3M04	2350 035 10689	4 x 68Ω 5%	3R22	4822 051 30759	75Ω 5% 0.062W	5908	2422 549 45333	Bead 120Ω at 100MHz
3M06	2350 035 10229	4 x 22Ω 5% 1206	3R23	4822 051 30101	100Ω 5% 0.062W	5909	2422 549 45333	Bead 120Ω at 100MHz
3M07	2350 035 10229	4 x 22Ω 5% 1206	3R28	4822 051 30759	75Ω 5% 0.062W	5910	2422 549 45333	Bead 120Ω at 100MHz
3M08	2350 035 10229	4 x 22Ω 5% 1206	3R29	4822 051 30101	100Ω 5% 0.062W	5911	2422 549 45333	Bead 120Ω at 100MHz
3M09	2350 035 10229	4 x 22Ω 5% 1206	3R35	4822 051 30101	100Ω 5% 0.062W	5C00	2422 549 45333	Bead 120Ω at 100MHz
3M11	3198 031 04720	4.7kΩ 5% 0402	3R36	4822 051 30103	10kΩ 5% 0.062W	5D00	2422 549 42896	Bead 120Ω 100MHz
3M13	3198 031 04720	4.7kΩ 5% 0402	3R37	4822 117 12925	47kΩ 1% 0.063W 0603	5D01	2422 549 42896	Bead 120Ω 100MHz
3M14	4822 117 13545	100Ω 1% 0402	3R40	4822 051 30759	75Ω 5% 0.062W	5D02	2422 549 42896	Bead 120Ω 100MHz
3M15	4822 117 13545	100Ω 1% 0402	3R42	4822 051 30101	100Ω 5% 0.062W	5D03	2422 549 42896	Bead 120Ω 100MHz
3M16	3198 031 04720	4.7kΩ 5% 0402	3R43	4822 117 12925	47kΩ 1% 0.063W 0603	5D04	2422 549 42896	Bead 120Ω 100MHz
3M26	4822 117 13605	Jumper 0402	3R46	4822 117 12925	47kΩ 1% 0.063W 0603	5E00	2422 549 45333	Bead 120Ω at 100MHz
3M27	4822 117 13605	Jumper 0402	3R51	4822 051 30103	10kΩ 5% 0.062W	5E01	2422 549 45333	Bead 120Ω at 100MHz
3M50	4822 117 13606	10kΩ 5% 0.01W 0402	3R53	4822 051 30153	15kΩ 5% 0.062W	5E02	2422 549 45333	Bead 120Ω at 100MHz
3M51	4822 117 13606	10kΩ 5% 0.01W 0402	3R54	4822 051 30103	10kΩ 5% 0.062W	5E03	2422 549 45333	Bead 120Ω at 100MHz
3M52	4822 117 13606	10kΩ 5% 0.01W 0402	3R56	4822 051 30153	15kΩ 5% 0.062W	5J01	2422 549 42896	Bead 120Ω 100MHz
3M53	4822 117 13546	47Ω 5% 0402	3R57	4822 051 30759	75Ω 5% 0.062W	5J02	2422 549 42896	Bead 120Ω 100MHz
3M54	4822 117 13546	47Ω 5% 0402	3R58	4822 117 12925	47kΩ 1% 0.063W 0603	5J03	2422 549 45333	Bead 120Ω at 100MHz
3M55	4822 117 13546	47Ω 5% 0402	3R77	4822 117 12925	47kΩ 1% 0.063W 0603	5J04	2422 549 45333	Bead 120Ω at 100MHz
3M56	4822 117 13606	10kΩ 5% 0.01W 0402	3R87	4822 051 30151	150Ω 5% 0.062W	5L00	2422 549 45333	Bead 120Ω at 100MHz
3M57	4822 117 13546	47Ω 5% 0402	3R88	4822 051 30151	150Ω 5% 0.062W	5L01	2422 549 45333	Bead 120Ω at 100MHz
3M58	4822 117 13606	10kΩ 5% 0.01W 0402	3R89	4822 117 12891	220kΩ 1%	5L02	2422 549 45333	Bead 120Ω at 100MHz
3M59	4822 117 13546	47Ω 5% 0402	3R90	4822 117 12891	220kΩ 1%	5M00	2422 549 45333	Bead 120Ω at 100MHz
3M78	4822 117 13548	1kΩ 5% 0402	3R96	4822 117 12925	47kΩ 1% 0.063W 0603	5M01	2422 549 45333	Bead 120Ω at 100MHz
3M79	3198 031 03320	3.3kΩ 5% 0402	3R98	4822 117 12925	47kΩ 1% 0.063W 0603	5M02	2422 549 45333	Bead 120Ω at 100MHz
3M87	4822 117 13605	Jumper 0402	4206	4822 051 20008	Jumper 0805	5M03	2422 549 45333	Bead 120Ω at 100MHz
3M89	3198 031 02290	22Ω 5% 0.1W 0402	4211	4822 117 13605	Jumper 0402	5M04	2422 549 45333	Bead 120Ω at 100MHz
3M90	3198 031 02290	22Ω 5% 0.1W 0402	4212	4822 117 13605	Jumper 0402	5M05	2422 549 45333	Bead 120Ω at 100MHz
3N01	4822 117 13606	10kΩ 5% 0.01W 0402	4440	4822 117 13605	Jumper 0402	5N01	4822 157 11716	Bead 30Ω at 100MHz
3N02	4822 117 13606	10kΩ 5% 0.01W 0402	4441	4822 117 13605	Jumper 0402	5N02	4822 157 11716	Bead 30Ω at 100MHz
3N03	4822 117 13606	10kΩ 5% 0.01W 0402	4501	4822 117 13605	Jumper 0402	5N03	4822 157 11716	Bead 30Ω at 100MHz
3N04	4822 117 13606	10kΩ 5% 0.01W 0402	4502	4822 117 13605	Jumper 0402	5N04	4822 157 11716	Bead 30Ω at 100MHz
3N05	4822 117 13606	10kΩ 5% 0.01W 0402	4504	4822 117 13605	Jumper 0402	5N05	4822 157 11716	Bead 30Ω at 100MHz
3N06	4822 117 13606	10kΩ 5% 0.01W 0402	4511	4822 117 13605	Jumper 0402	5P01	4822 157 11716	Bead 30Ω at 100MHz
3N07	4822 051 30333	33kΩ 5% 0.062W	4801	4822 117 13605	Jumper 0402	5P02	4822 157 11716	Bead 30Ω at 100MHz
3N08	4822 117 13606	10kΩ 5% 0.01W 0402	4A04	4822 117 13605	Jumper 0402	5P03	4822 157 11716	Bead 30Ω at 100MHz
3N09	4822 117 13548	1kΩ 5% 0402	4J01	4822 117 13605	Jumper 0402	5P04	4822 157 11716	Bead 30Ω at 100MHz
3N10	4822 117 13603	33kΩ 5% 0402	4K04	4822 117 13605	Jumper 0402	5P05	4822 157 11716	Bead 30Ω at 100MHz
3N11	4822 117 13546	47Ω 5% 0402	4K05	4822 117 13605	Jumper 0402	5P06	4822 157 11716	Bead 30Ω at 100MHz
3N12	4822 117 13606	10kΩ 5% 0.01W 0402	4L02	4822 117 13605	Jumper 0402	5Q01	2422 549 45333	Bead 120Ω at 100MHz
3N13	4822 117 13606	10kΩ 5% 0.01W 0402	4L05	4822 117 13605	Jumper 0402	5Q06	2422 549 45333	Bead 120Ω at 100MHz
3N14	4822 117 13606	10kΩ 5% 0.01W 0402	4M00	4822 117 13605	Jumper 0402	5Q11	2422 549 45333	Bead 120Ω at 100MHz
3N15	4822 117 13546	47Ω 5% 0402	4M01	4822 117 13605	Jumper 0402	5Q16	2422 549 45333	Bead 120Ω at 100MHz
3N16	4822 117 13546	47Ω 5% 0402	4M02	4822 117 13605	Jumper 0402	5Q21	2422 549 45333	Bead 120Ω at 100MHz
3N17	4822 117 13546	47Ω 5% 0402	4M03	4822 117 13605	Jumper 0402	5Q23	2422 549 45333	Bead 120Ω at 100MHz
3N18	4822 117 13546	47Ω 5% 0402	4M05	4822 117 13605	Jumper 0402	5R57	2422 549 45333	Bead 120Ω at 100MHz
3N19	4822 117 13606	10kΩ 5% 0.01W 0402	4M08	4822 117 13605	Jumper 0402			
3N20	4822 117 13546	47Ω 5% 0402	4M09	4822 117 13605	Jumper 0402			
3N21	4822 117 13545	100Ω 1% 0402	4M10	4822 117 13605	Jumper 0402			
3N22	4822 117 13545	100Ω 1% 0402	4M16	4822 117 13605	Jumper 0402			
3N23	4822 117 13545	100Ω 1% 0402	4M17	4822 117 13605	Jumper 0402			
3N24	4822 117 13545	100Ω 1% 0402	4N21	4822 117 13605	Jumper 0402			
3N25	4822 117 13545	100Ω 1% 0402	4N22	4822 117 13605	Jumper 0402			
3N26	3198 031 04720	4.7kΩ 5% 0402						
3N27	4822 117 13546	47Ω 5% 0402						
3N28	4822 051 30181	180Ω 5% 0.062W						
3N29	4822 117 13545	100Ω 1% 0402						
3N30	4822 117 13545	100Ω 1% 0402						
3N31	4822 117 13545	100Ω 1% 0402						
3N32	4822 117 13545	100Ω 1% 0402						
3N33	4822 117 13545	100Ω 1% 0402						
3N34	4822 117 13545	100Ω 1% 0402						
3N35	4822 117 13545	100Ω 1% 0402						
3N46	4822 117 13545	100Ω 1% 0402						
3N47	4822 117 13545	100Ω 1% 0402						
3P01	3198 031 04720	4.7kΩ 5% 0402						
3P03	4822 117 13546	47Ω 5% 0402						

6N01	9322 085 77685	TLMG3100
6Q16	4822 130 11397	BAS316
6R61	4822 130 11416	PDZ6.8B
6R62	4822 130 11416	PDZ6.8B
6R63	4822 130 11416	PDZ6.8B
6R64	4822 130 11416	PDZ6.8B
6R65	4822 130 11416	PDZ6.8B
6R66	4822 130 11416	PDZ6.8B
6R67	4822 130 11416	PDZ6.8B
6R68	4822 130 11416	PDZ6.8B



7201	9340 550 49115	PUMH7
7202	9340 550 49115	PUMH7
7206	4822 130 60373	BC856B
7207		For SW see item 7053
7214	9339 693 90135	BCP69-25
7215	9339 693 90135	BCP69-25
7216	9340 425 20115	BC847BS
7217		For SW see item 7050
7430	4822 130 11155	PDTC114ET
7436	9322 221 97668	SN74LVC14APW
7501	9322 199 16668	M74HC590T
7502	9322 208 98668	M68AF031AM70N6
7503	9322 199 16668	M74HC590T
7504	3198 010 42310	BC847BW
7505	9351 870 00118	74HC573PW
7506	9351 870 00118	74HC573PW
7601	9322 183 05668	TS482ID
7602	9351 742 70118	74HC08PW
7603	3198 010 42310	BC847BW
7604	3198 010 42310	BC847BW
7605	9340 310 50215	PDTA143ET
7606	9340 425 20115	BC847BS
7708	9322 139 16668	LF33CPT
7710	9322 202 34668	L5973D
7730	9322 191 07668	L5970D
7735	4822 130 42804	BC817-25
7738	9322 163 24668	L78M08CDT
7741	3198 010 42310	BC847BW
7742	3198 010 42310	BC847BW
7752	5322 209 90529	MC34063AD
7756	4822 130 11155	PDTC114ET
7758	9322 212 14668	SI4423DY
7801	9322 200 07671	GM1501-LF-BD
7900	9322 142 88668	LF25CDT
7901	9322 189 19668	LD1086D2T18
7A02	3198 010 42310	BC847BW
7A03	3198 010 42310	BC847BW
7B01	9322 214 42671	K4D263238F-QC50
7C00		For SW see item 7051
7C01		For SW see item 7054
7C02	9322 215 39685	PST596JN
7D00		For SW see item 7056
7D01	9965 000 04199	BSN20
7D02	9965 000 04199	BSN20
7D03	9322 199 35671	SI9993CTG100
7D04	9352 703 94118	UDA1334BT/N2
7D05	9322 164 91668	CD74HC4053M
7E00	9322 195 23668	ADG733BRU
7E01	9322 199 80668	SM5301BS-G
7E02	9322 199 56668	ADG781BCP
7E03	9322 164 91668	CD74HC4053M
7E04	9322 221 97668	SN74LVC14APW
7E05	9322 221 97668	SN74LVC14APW
7L01	3198 010 42310	BC847BW
7L02	3198 010 42310	BC847BW
7L03	3198 010 42310	BC847BW
7L04	9322 212 77672	MST9883C-LF-110
7L05	4822 209 17398	LD1117DT33
7L06	9965 000 04199	BSN20
7L07	9965 000 04199	BSN20
7M00	9322 204 76671	T6TU5XBG-0001
7M01	9322 206 19672	MSM56V16160F-7T3-FG
7M03	9322 170 14668	LF15ABDT
7N01		For SW see item 7052
7N02	9322 217 35671	EP1C12F256C8N
7N03	9340 425 20115	BC847BS
7N04	9322 210 59668	THC63LVD84B
7P01	9322 170 14668	LF15ABDT
7P02	9322 201 03668	THC63LVDM83R
7Q01	3198 010 42310	BC847BW
7Q25		For SW see item 7055
7R12	3198 010 42310	BC847BW
7R57	9322 164 91668	CD74HC4053M

PDP Audio Amplifier Panel [C]

Various

1735	4822 267 10918	Connector 3p
1736	2422 025 10768	Connector 3p m
1M01	2422 025 18744	Connector 9p m
1M02	2422 025 18742	Connector 7p m
1M02	4822 267 10618	Connector 7p
1M03	2422 025 18738	Connector 3p m
1M04	2422 025 19515	Connector 3p m
1M06	2422 025 11244	Connector 7p m
1M52	2422 025 10769	Connector 9p m



2700	4822 126 14247	1.5nF 50V 0603
2701	4822 126 14249	560pF 10% 50V 0603
2701	5322 116 80853	560pF 5% 63V
2703	2020 552 96683	220nF 10% 50V
2704	4822 124 11767	470μF 20% 25V
2705	4822 126 14249	560pF 10% 50V 0603
2705	5322 116 80853	560pF 5% 63V
2706	5322 126 11579	3.3nF 10% 63V
2707	2222 580 15649	100nF 10% 50V 0805
2709	2020 552 96683	220nF 10% 50V
2710	2020 552 96683	220nF 10% 50V
2711	2022 552 05679	1μF 10% 16V 0805
2712	4822 126 14583	470nF 10% 16V 0805
2713	4822 126 13193	4.7nF 10% 63V
2715	4822 121 51252	470nF 5% 63V
2716	3198 017 31530	15nF 20% 50V 0603
2717	2022 552 05679	1μF 10% 16V 0805
2718	2222 580 15649	100nF 10% 50V 0805
2719	4822 126 14583	470nF 10% 16V 0805
2720	2020 021 91431	22μF 20% 100V
2721	2222 580 15649	100nF 10% 50V 0805
2722	4822 126 14583	470nF 10% 16V 0805
2723	2022 552 05679	1μF 10% 16V 0805
2726	4822 126 13193	4.7nF 10% 63V
2727	4822 126 14249	560pF 10% 50V 0603
2727	5322 116 80853	560pF 5% 63V
2731	4822 126 14249	560pF 10% 50V 0603
2731	5322 116 80853	560pF 5% 63V
2732	4822 126 14583	470nF 10% 16V 0805
2736	4822 121 51252	470nF 5% 63V
2737	3198 017 31530	15nF 20% 50V 0603
2739	2222 580 15649	100nF 10% 50V 0805
2741	4822 126 13883	220pF 5% 50V
2743	3198 016 31020	1nF 25V 0603
2744	2222 580 15649	100nF 10% 50V 0805
2745	2020 552 96683	220nF 10% 50V
2746	4822 124 11767	470μF 20% 25V
2747	2022 552 05679	1μF 10% 16V 0805
2748	4822 126 14247	1.5nF 50V 0603
2749	5322 126 11579	3.3nF 10% 63V
2751	4822 124 40433	47μF 20% 25V
2754	2020 021 91431	22μF 20% 100V
2770	3198 017 41050	1μF 10V 0603
2776	2020 021 91431	22μF 20% 100V
2780	4822 126 14583	470nF 10% 16V 0805
2784	4822 122 33761	22pF 5% 50V
2785	4822 122 33761	22pF 5% 50V
2786	4822 122 33761	22pF 5% 50V
2787	4822 122 33761	22pF 5% 50V
2789	4822 126 14583	470nF 10% 16V 0805
2791	4822 126 13879	220nF +80-20% 16V
27A0	5322 122 32448	10pF 5% 63V
27A1	5322 122 32448	10pF 5% 63V
2D02	2020 552 96637	10μF 10% 6.3V 0805
2D03	2238 869 15101	100pF 5% 50V 0402
2D04	2020 552 96628	10nF 10% 16V 0402
2D11	2250 200 13667	2.2μF 10% 6.3V 0805
2D14	2222 580 15649	100nF 10% 50V 0805
2D17	2222 580 15649	100nF 10% 50V 0805
2D19	2222 580 15649	100nF 10% 50V 0805
2D20	2222 580 15649	100nF 10% 50V 0805
2D21	2222 580 15649	100nF 10% 50V 0805
2D22	2020 021 00215	220μF 20% 25V
2D23	2020 021 00215	220μF 20% 25V
2D26	2022 552 05679	1μF 10% 16V 0805
2D27	2022 552 05679	1μF 10% 16V 0805
2D28	2020 021 00215	220μF 20% 25V
2D30	2020 552 96628	10nF 10% 16V 0402
2D31	2020 552 96628	10nF 10% 16V 0402
2D32	2020 552 96621	1.5nF 10% 50V 0402
2D35	2020 552 96621	1.5nF 10% 50V 0402
2D36	2020 552 96621	1.5nF 10% 50V 0402
2D37	2020 552 96621	1.5nF 10% 50V 0402
2D38	2222 580 15649	100nF 10% 50V 0805
2D39	2020 552 96621	1.5nF 10% 50V 0402

2D40	2020 552 96621	1.5nF 10% 50V 0402
2D41	2222 580 15649	100nF 10% 50V 0805
2D43	2222 580 15649	100nF 10% 50V 0805
2D45	4822 126 14585	100nF 10% 0805 50V
2D46	4822 126 14585	100nF 10% 0805 50V
2D47	2020 552 96621	1.5nF 10% 50V 0402
2D48	2020 552 96621	1.5nF 10% 50V 0402
2D49	2020 552 96621	1.5nF 10% 50V 0402
2D50	2020 552 96621	1.5nF 10% 50V 0402
2D51	2020 552 96618	1nF 10% 50V 0402
2D52	2020 021 00215	220μF 20% 25V
2D53	2020 552 96828	470nF 20% 25V
2D54	2020 552 96828	470nF 20% 25V
2D55	2020 552 96621	1.5nF 10% 50V 0402
2D63	2020 552 96628	10nF 10% 16V 0402
2D64	3198 034 02280	2.2pF 1% 50V 0402
2D65	3198 034 02280	2.2pF 1% 50V 0402
2D66	3198 034 02280	2.2pF 1% 50V 0402
2D67	2238 586 59812	100nF 20% 50V 0603
2D68	2238 586 59812	100nF 20% 50V 0603
2D71	3198 034 01080	1pF 1% 50V 0402
2D71	3198 034 04780	4.7pF 50V NPO 0402
2D72	3198 034 01080	1pF 1% 50V 0402
2D72	3198 034 04780	4.7pF 50V NPO 0402
2D73	2020 552 96628	10nF 10% 16V 0402
2M10	2020 552 96618	1nF 10% 50V 0402
2M11	2020 552 96618	1nF 10% 50V 0402
2M12	2020 552 96618	1nF 10% 50V 0402
2M13	2020 552 96618	1nF 10% 50V 0402
2M14	2020 552 96618	1nF 10% 50V 0402
2M15	2020 552 96623	2.2nF 10% 50V 0402
2M16	2020 552 96623	2.2nF 10% 50V 0402
2M17	2020 552 96623	2.2nF 10% 50V 0402
2M18	2020 552 96623	2.2nF 10% 50V 0402
2M19	2020 552 96618	1nF 10% 50V 0402



3700	4822 051 30561	560Ω 5% 0.062W
3701	4822 051 30479	47Ω 5% 0.062W
3702	3198 021 38220	8.2kΩ 5% 0.062W 0603
3703	3198 021 38220	8.2kΩ 5% 0.062W 0603
3704	4822 117 13632	100kΩ 1% 0603 0.62W
3705	4822 051 30222	2.2kΩ 5% 0.062W
3706	4822 051 30682	6.8Ω 5% 0.062W
3707	4822 051 30393	39kΩ 5% 0.062W
3708	4822 051 30479	47Ω 5% 0.062W
3709	4822 051 30272	2.7kΩ 5% 0.062W
3710	4822 051 30393	39kΩ 5% 0.062W
3711	2322 762 60568	5.6Ω 5% 5% 2512
3712	4822 051 30272	2.7kΩ 5% 0.062W
3713	4822 051 30332	3.3Ω 5% 0.062W
3714	4822 051 30682	6.8Ω 5% 0.062W
3715	2322 762 60568	5.6Ω 5% 5% 2512
3716	4822 117 13632	100kΩ 1% 0603 0.62W
3717	4822 051 30222	2.2kΩ 5% 0.062W
3718	4822 051 30561	560Ω 5% 0.062W
3719	4822 051 30124	120kΩ 5% 0.062W
3720	4822 051 30479	47Ω 5% 0.062W
3721	4822 051 30471	47Ω 5% 0.062W
3722	4822 051 30124	120kΩ 5% 0.062W
3723	4822 051 30471	47Ω 5% 0.062W
3724	4822 051 30102	1kΩ 5% 0.062W
3725	4822 117 12925	47kΩ 1% 0.063W 0603
3726	4822 051 30153	15kΩ 5% 0.062W
3727	4822 051 30103	10kΩ 5% 0.062W
3728	4822 051 30153	15kΩ 5% 0.062W
3729	4822 117 12925	47kΩ 1% 0.063W 0603
3730	4822 051 30223	22kΩ 5% 0.062W
3731	4822 051 30102	1kΩ 5% 0.062W
3732	4822 051 30223	22kΩ 5% 0.062W
3733	4822 051 30562	5.6kΩ 5% 0.063W 0603
3734	4822 051 30223	22kΩ 5% 0.062W
3735	4822 117 12889	270kΩ 1% 0.063W 0603
3736	4822 117 12925	47kΩ 1% 0.063W 0603
3737	4822 117 12925	47kΩ 1% 0.063W 0603
3738	4822 117 13632	100kΩ 1% 0603 0.62W
3760	4822 051 30223	22kΩ 5% 0.062W
3764	4822 117 13632	100kΩ 1% 0603 0.62W
3765	4822 117 13632	100kΩ 1% 0603 0.62W
3777	4822 051 30102	1kΩ 5% 0.062W
3778	4822 051 30479	47Ω 5% 0.062W
3999	4822 051 30472	4.7Ω 5% 0.062W
3D01	3198 031 02240	220kΩ 5% 0.1W 0402
3D01	4822 117 11297	100kΩ 5% 0.1W
3D10	3198 031 04730	47Ω 5% 0402
3D11	4822 117 13601	22kΩ 5% 0402
3D12	4822 117 13601	22kΩ 5% 0402
3D13	3198 031 02720	2.7kΩ 5% 0.01W 0402
3D14	3198 031 02240	220kΩ 5% 0.1W 0402
3D15	3198 031 04740	470kΩ 5% 0402
3D16	4822 117 13602	2.2kΩ 5% 0.01W 0402
3D17	3198 031 02240	220kΩ 5% 0.1W 0402

3D18	3198 031 04730	47Ω 5% 0402
3D20	4822 117 13601	22kΩ 5% 0402
3D21	3198 031 02720	2.7kΩ 5% 0.01W 0402
3D22	4822 117 13606	10kΩ 5% 0.01W 0402
3D23	4822 117 13602	2.2kΩ 5% 0.01W 0402
3D24	4822 117 13606	10kΩ 5% 0.01W 0402
3D25	4822 117 13548	1kΩ 5% 0402
3D26	4822 117 13602	2.2kΩ 5% 0.01W 0402
3D34	2322 762 60332	3.3kΩ 5% 2512
3D35	4822 117 13548	1kΩ 5% 0402
3D37	2322 762 60332	3.3kΩ 5% 2512
3D38	4822 117 13548	1kΩ 5% 0402
3D39	2350 033 11223	22kΩ 5%
3D40	2350 033 11223	22kΩ 5%
3D42	3198 031 04730	47Ω 5% 0402
3D43	5322 117 11726	10Ω 5%
3D44	2322 762 60331	330Ω 5% 2512
3D45	2322 762 60331	330Ω 5% 2512
3D46	3198 031 04780	4.7Ω 5% 0402
3D47	3198 031 04780	4.7Ω 5% 0402
3D49	3198 031 01530	15kΩ 5% 0.01W 0402
3D50	3198 031 06820	6.8kΩ 5% 0.01W 0402
3D51	3198 031 06820	6.8kΩ 5% 0.01W 0402
3D54	3198 031 04730	47Ω 5% 0402
3D56	3198 031 01530	15kΩ 5% 0.01W 0402
3D57	3198 031 01530	15kΩ 5% 0.01W 0402
3D58	3198 031 06810	680Ω 5% 0.01W 0402
3D64	4822 117 13548	1kΩ 5% 0402
3D65	4822 117 13548	1kΩ 5% 0402
3D67	3198 031 03920	3.9kΩ 5% 0402
3D68	4822 117 11297	100kΩ 5% 0.1W
3D69	3198 031 03920	3.9kΩ 5% 0402
3D70	4822 117 11297	100kΩ 5% 0.1W
3D71	4822 117 13606	10kΩ 5% 0.01W 0402
3D72	4822 117 13606	10kΩ 5% 0.01W 0402
3D73	3198 031 05610	560Ω 5% 0.01W 0402
3D74	3198 031 05610	560Ω 5% 0.01W 0402
3D75	3198 031 04730	47Ω 5% 0402
3D76	4822 117 13601	22kΩ 5% 0402
3D78	4822 117 13601	22kΩ 5% 0402
3D79	4822 117 13601	22kΩ 5% 0402
3D81	3198 031 06810	680Ω 5% 0.01W 0402
3D82	3198 031 04730	47Ω 5% 0402
3D83	3198 031 04730	47Ω 5% 0402
3D84	3198 031 04730	47Ω 5% 0402
3D85	3198 031 04730	47Ω 5% 0402
3D86	4822 117 11297	100kΩ 5% 0.1W
3D87	3198 031 04730	47Ω 5% 0402
3D88	4822 117 13603	33kΩ 5% 0402
3D89	4822 117 13601	22kΩ 5% 0402
3D91	4822 117 13603	33kΩ 5% 0402
3M04	4822 117 13545	100Ω 1% 0402
9710	4822 051 20008	Jumper 0805
9711	4822 051 20008	Jumper 0805
9712	4822 051 20008	Jumper 0805
9713	4822 051 20008	Jumper 0805
9748	4822 051 20008	Jumper 0805
9757	4822 051 20008	Jumper 0805
9758	4822 051 20008	Jumper 0805
9759	4822 051 20008	Jumper 0805
9760	4822 051 20008	Jumper 0805
9761	4822 051 20008	Jumper 0805
9762	4822 051 20008	Jumper 0805
9763	4822 051 20008	Jumper 0805
9764	4822 051 20008	Jumper 0805
9765	4822 051 20008	Jumper 0805
9766	4822 051 20008	Jumper 0805
9768	4822 051 20008	Jumper 0805
9770	4822 051 20008	Jumper 0805
9790	4822 051 20008	Jumper 0805
9795	4822 051 20008	Jumper 0805
9796	4822 051 20008	Jumper 0805
9806	4822 051 20008	Jumper 0805
9807	4822 051 20008	Jumper 0805
9808	4822 051 20008	Jumper 0805
9D03	2350 033 91001	4 x Jumper
9D04	2350 033 91001	4 x Jumper



5700	2422 536 00942	33μH 20%
5701	4822 157 11716	Bead 30Ω at 100MHz
5702	2422 536 00942	33μH 20%
5705	4822 157 11411	Bead 80Ω at 100MHz
5708	4822 157 11411	Bead 80Ω at 100MHz
5D10	2422 549 44197	Bead 220Ω at 100MHz
5D11	2422 549 44197	Bead 220Ω at 100MHz
5D12	2422 536 00137	33μH 10%
5D13	2422 536 00137	33μH 10%
5D14	2422 549 44197	Bead 220Ω at 100MHz
5D15	2422 549 44197	Bead 220Ω at 100MHz
5D16	2422 549 44197	Bead 220Ω at 100MHz
5M02	2422 549 44197	Bead 220Ω at 100MHz

5M03	2422 549 44197	Bead 220Ω at 100MHz
5M09	2422 549 44197	Bead 220Ω at 100MHz
5M10	2422 549 44197	Bead 220Ω at 100MHz
5M11	2422 549 44197	Bead 220Ω at 100MHz
5M12	2422 549 44197	Bead 220Ω at 100MHz

6700	4822 130 11522	UDZ15B
6702	9322 150 18685	BZX384-C47
6703	4822 130 10838	UDZ3.3B
6D10	4822 130 11397	BAS316
6D11	9340 548 69115	PDZ27B
6D12	4822 130 11397	BAS316

7700	9322 202 89668	LM393P
7701	9352 729 65112	TDA8925ST/N1
7702	3198 010 42310	BC847BW
7705	3198 010 42310	BC847BW
7706	3198 010 42310	BC847BW
7707	3198 010 42310	BC847BW
7708	3198 010 42320	BC857BW
7709	3198 010 42310	BC847BW
7710	3198 010 42310	BC847BW
7711	3198 010 42320	BC857BW
7712	3198 010 42310	BC847BW
7713	3198 010 42310	BC847BW
7D10	9322 213 35668	LM339P
7D11	9340 425 20115	BC847BS
7D12	9340 425 20115	BC847BS
7D14	3198 010 42310	BC847BW
7D15	3198 010 44350	BC807-25W
7D16	9340 425 30115	BC847BPN
7D17	9340 219 30115	BC817-25W
7D18	9322 224 40668	FET FDS4559_NL
7D19	3198 010 42310	BC847BW
7D20	3198 010 44350	BC807-25W
7D21	9340 425 30115	BC847BPN
7D22	9340 219 30115	BC817-25W
7D23	9322 224 40668	FET FDS4559_NL
7D24	9340 219 30115	BC817-25W
7D25	9340 425 30115	BC847BPN
7D26	9340 425 30115	BC847BPN

1001	2422 026 05133	Connector SVHS 4p f
1002	2422 026 05807	Sckt Cinch 3p f YeWhRd
1010	4822 267 31014	Sckt headphone
1M36	2422 025 17179	Connector 11p m

2003	2022 552 05679	1μF 10% 16V 0805
2004	3198 016 36810	680pF 25V 0603
2005	2020 552 94427	100pF 5% 50V
2006	3198 016 36810	680pF 25V 0603
2007	2020 552 94427	100pF 5% 50V
2008	2238 916 15641	22nF 10% 25V 0603
2009	5322 126 11583	10nF 10% 50V 0603
2010	2238 916 15641	22nF 10% 25V 0603
2011	5322 126 11583	10nF 10% 50V 0603

3000	4822 051 30759	75Ω 5% 0.062W
3004	4822 051 30759	75Ω 5% 0.062W
3008	4822 051 30222	2.2kΩ 5% 0.062W
3009	4822 051 30102	1kΩ 5% 0.062W
3010	4822 051 30333	33kΩ 5% 0.062W
3011	4822 051 30392	3.9Ω 5% 0.063W 0603
3012	4822 051 30102	1kΩ 5% 0.062W
3013	4822 051 30333	33kΩ 5% 0.062W
3016	4822 051 30103	10kΩ 5% 0.062W
3020	4822 051 30103	10kΩ 5% 0.062W
9004	4822 051 30008	Jumper 0603
9005	4822 051 30008	Jumper 0603
9006	4822 051 30008	Jumper 0603
9007	4822 051 30008	Jumper 0603
9008	4822 051 30008	Jumper 0603
9009	4822 051 30008	Jumper 0603
9010	4822 051 30008	Jumper 0603
9011	4822 051 30008	Jumper 0603



Side I/O Panel [D]

Various



6000	4822 130 11416	PDZ6.8B
6001	4822 130 11416	PDZ6.8B
6002	4822 130 11416	PDZ6.8B
6003	4822 130 11416	PDZ6.8B
6004	4822 130 11416	PDZ6.8B
6005	4822 130 11416	PDZ6.8B
6006	4822 130 11416	PDZ6.8B
6007	4822 130 11416	PDZ6.8B
6008	4822 130 11416	PDZ6.8B
6009	4822 130 11416	PDZ6.8B
6010	4822 130 11416	PDZ6.8B
6011	4822 130 11416	PDZ6.8B

Control Board [E]

Various

1701	4822 276 13775	Switch 1p 0.1A 12V
1702	4822 276 13775	Switch 1p 0.1A 12V
1703	4822 276 13775	Switch 1p 0.1A 12V
1704	4822 276 13775	Switch 1p 0.1A 12V
1705	4822 276 13775	Switch 1p 0.1A 12V
1706	4822 276 13775	Switch 1p 0.1A 12V
1M01	2422 025 10775	Connector 3p m



3002	4822 051 30151	150Ω 5% 0.062W
3003	4822 051 30391	390Ω 5% 0.062W
3004	4822 051 30561	560Ω 5% 0.062W
3005	4822 117 12968	820Ω 5% 0.62W
3006	3198 021 31820	1.8kΩ 5% 0.062W 0603
3999	4822 117 11454	820Ω 1% 0.1W

LED Panel [J]

Various

0163	3122 124 36081	Day light filter
0345	2422 025 18741	Connector 6p m
1040	9322 206 81667	TSOP34836YA1



2040	4822 124 12095	100μF 20% 16V
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3040	4822 117 13597	330Ω 5% 0.01W 0402
3051	4822 051 30221	220Ω 5% 0.062W
3061	4822 051 30221	220Ω 5% 0.062W
3063	4822 117 13606	10kΩ 5% 0.01W 0402
3078	3198 031 02250	2.2MΩ 5% 0.1W 0402
9012	4822 117 13605	Jumper 0402
9041	4822 117 13605	Jumper 0402
9042	4822 117 13605	Jumper 0402
9062	4822 117 13605	Jumper 0402
9066	4822 117 13606	10kΩ 5% 0.01W 0402
9070	4822 117 13605	Jumper 0402
9081	4822 117 13605	Jumper 0402
9082	4822 117 13605	Jumper 0402
9111	4822 117 13605	Jumper 0402
9112	4822 117 13605	Jumper 0402
9115	4822 117 13605	Jumper 0402
9122	4822 117 13605	Jumper 0402



6051	9322 218 97685	SML-310VTK
6060	9322 134 46685	SML-310MT
6070	9322 140 63685	TEMD5000



7051	3198 010 42310	BC847BW
7052	3198 010 42310	BC847BW
7062	4822 130 60373	BC856B

11. Revision List

Manual xxxx xxx xxxx.0

- First release.

Manual xxxx xxx xxxx.1

- I2C Diagram positioned.
- Spare Parts List added.